SP305-23 ABRIDGED

# NIST LIST OF UBLICATIONS

BY

SUBJECT CATEGORY

REV SED JULY 1992



U.S. DEPARTMENT OF COMMERCE Technology Administration National Institute of Standards and Technology

The second residual control of the second residual control of

Teacher and reserve with movement and an arrangement of the first party of the first part

and Sufficient Level Western Shorting 640 to

Two and are a colorate in receive Government of Junior 19 and Comment of Comments of Spirit Once The Je policy logarity level in Accordance American manner of the policy logarity level in Accordance American manner of the policy logarity level of the policy logarity level of the policy logarity level is seen to all received for the policy logarity level in the policy logarity level is contained to the policy logarity level in the policy logarity level in the policy logarity level is contained to the policy logarity level in the policy logarity level in the policy level in the pol

The content of the co

# NIST PUBLICATIONS ANNOUNCEMENTS

### SAMPLE ENTRY

**ENVIRONMENTAL POLLUTION &** CONTROL

**NTIS Subject Category** 

Air Poliution & Control

100.905

PB91-167353

PC A03/MF A01

National Inst. of Standards and Technology (BFRL),

Gaithersburg, MD.

Proposed Standard Practice for Assessing the

Performance of Gas-Phase Air Cleaning Equipment

S. Silberstein, Mar 91, 23 p

NISTIR-4523

Contract F-000000

**NTIS Subcategory** 

Abstract Number

NTIS order number Avallability **Price Codes** 

Corporate or performing organization

Report Title

Personal authors

Report date

Page count

Report Number

Contract or grant number

# **ADMINISTRATION &** MANAGEMENT

### Personnel Management, Labor **Relations & Manpower Studies**

PB91-231555 PC A05/MF A01 National Inst. of Standards and Technology, Gaithersburg, MD. Office of Personnel and Civil Rights.

NIST Personnel Management Demonstration Project: Design, Implementation and Accomplishments.

A. Cassady. Jul 91, 94p NISTIR-4640

### **Public Administration & Government**

PB91-167379 PC A06/MF A01 National Inst. of Standards and Technology, Gaithersburg, MD. Office of Standards Code and Information.

Directory of Federal Government Laboratory Accreditation/Designation Programs. Special pub. (Final).

M. Breitenberg. Feb 91, 105p NIST/SP-808
Also available from Supt. of Docs. See also PB88-

### **Management Practice**

PB91-167833 PC A05/MF A01 National Inst. of Standards and Technology, Gaithersburg, MD.

Interim Report to the President and to the Congress on the Maicoim Baidrige National Quality Award.

Interim rept. (Final).

Apr 91, 90p

Portions of this document are not fully legible. This publication does not have a series number assigned.

PC A03/MF A01 PB92-126481 National Inst. of Standards and Technology, Gaithersburg, MD.

Feasibility of Using a Multiple Award Schedule for Specifying Paints in Government Painting Con-

tracts. M. E. McKnight. Nov 91, 19p NISTIR-4706 See also PB86-230653. Sponsored by Tri-Services Facilities Coatings Committee.

### **Productivity**

PB91-177774 PC A99/MF A04 National Inst. of Standards and Technology, Gaithersburg, MD. Office of Standards Code and Information. Standards Activities of Organizations in the United States.

Special pub. (Final).

R. B. Toth, Feb 91, 738p NIST/SP-806

Supersedes PB85-106151. Also available from Supt. of Docs. See also PB89-221147.

PC A05/MF A01 PB91-222695 National Inst. of Standards and Technology (BFRL), Gaithersburg, MD.
Standards for the Physical Protection of National

Resources and Facilities.

Final rept. R. D. Dikkers. Jul 91, 89p NISTIR-4618 Contract IAA-EMW-90-E-3279

Sponsored by Federal Emergency Management Agency, Washington, DC.

### Research Program Administration & **Technology Transfer**

PB91-187559 PC A03/MF A01 National Inst. of Standards and Technology, Gaithersburg, MD.

#### **ADMINISTRATION & MANAGEMENT**

### Research Program Administration & Technology Transfer

NIST Research Reports, March 1991.

Special pub.

Mar 91, 41p NIST/SP-809

Also available from Supt. of Docs. as SN003-003-03081-3. See also PB91-112813.

PB91-195545 Not available NTIS National Bureau of Standards (NEL), Gaithersburg, MD. Office of Energy-Related Inventions.

Trends in Technological Innovation.

Final rept.

H. Robb. 1988, 4p

Sponsored by American Society of Mechanical Engineers. New York.

Pub. in Proceedings of the Intersociety Energy Conversion Engineering Conference (23rd), Denver, CO., July 31-August 5, 1988, p305-308.

PB91-204032 Not available NTIS National Bureau of Standards (IMSE), Gaithersburg,

Advanced Materials: Opportunities and Challenges.

Final rept.

L. H. Schwartz, 1988, 8p

Pub. in Proceedings of Israel Materials Engineering Conference (4th), Beer Sheva, Israel, December 7-8, 1988, p51-58.

PB91-206748 PC A03/MF A01 National Inst. of Standards and Technology, Gaithersburg, MD. National Voluntary Lab. Accreditation Pro-

**NVLAP FY 90 Annual Report.** V. R. White. Jun 91, 19p NISTIR-4599 See also PB90-198920.

PB91-216531 PC A20/MF A04 National Inst. of Standards and Technology (TS), Gaithersburg, MD. Information Resources and Services Div

Publications of the National Institute of Standards and Technology, 1990 Catalog.

Rept. for Jan-Dec 90.

E. T. Gladden. Jun 91, 463p NIST/SP-305-SUPPL-22 Also available from Supt. of Docs. as SN003-003-03085-6. See also PB90-271818.

PC A05/MF A01 National Inst. of Standards and Technology, Gaithersburg, MD. Public Affairs Div.

Research. Services. Facilities. (National institute of Standards and Technology).

Special pub.

M. A. Bello, G. Porter, and S. A. Shaffer. Aug 91, 92p NIST/SP-817

Also available from Supt. of Docs.

#### PB92-126697

(Order as PB92-126614, PC A06/MF A02) National Inst. of Standards and Technology, Gaithersburg, MD.

Advanced Technology Program: A New Role for NIST In Accelerating the Development of Commercially Important Technologies.

B. C. Belanger, G. A. Uriano, and R. G. Kammer. 1991, 7p

Included in Jnl. of Research of the National Institute of Standards and Technology, v96 n5 p605-611 Sep/Oct 91.

# **AERONAUTICS & AERODYNAMICS**

# **ASTRONOMY & ASTROPHYSICS**

### **Aerodynamics**

Not available NTIS National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Fire Measurement and Research

Effects of Global Density Ratio on the Centerline Mixing Behavior of Axisymmetric Turbulent Jets. Final rept.

Final rept.
W. M. Pitts. 1991, 10p
Contract AFOSR-ISSA-85-00012
See also PB87-225413. Sponsored by Air Force Office of Scientific Research, Bolling AFB, DC.
Pub. in Experiments in Fluids 11, p125-134 1991.

PB92-117209 Not available NTIS National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Fire Measurement and Research

Reynolds Number Effects on the Mixing Behavlor of Axisymmetric Turbulent Jets.

Final rept. W. M. Pitts. 1991, 7p Contract AFOSR-ISSA-85-00012

See also PB87-201836. Sponsored by Air Force Office of Scientific Research, Bolling AFB, DC.
Pub. in Experiments in Fluids 11, p135-141 1991.

### **Astrophysics**

PB91-148825 Not available NTIS National Inst. of Standards and Technology (NML), Boulder, CO. Quantum Physics Div.

Modelling the Coronae and Chromospheres of RS CVn Systems by the Analysis of Ultraviolet, X-ray and Radio Observations.

Final rept.

J. L. Linsky. 1990, 13p Contracts NASA-NAG5-82, NASA-H-80531-B Sponsored by National Aeronautics and Space Admin-istration, Washington, DC.

Pub. in Active Close Binaries, p747-759 1990.

PB91-148833 Not available NTIS National Bureau of Standards (NML), Boulder, CO.

Quantum Physics Div.
Ultravlolet, Optical, Infrared, and Microwave Observations of HR 5110.

Final rept.

I. R. Little-Marenin, T. Simon, T. R. Ayres, N. L. Cohen, P. A. Feldman, J. L. Linsky, and S. J. Little. 1986, 11p Contract NAG5-82

Sponsored by National Aeronautics and Space Admin-

istration, Washington, DC. Pub. in Astrophysical Jnl. 303, n2 p780-790, 15 Apr 86.

# AGRICULTURE & FOOD

#### Food Technology

Not available NTIS National Inst. of Standards and Technology (NML),

Gaithersburg, MD. Ionizing Radiation Div. gamma-Irradlated Seafoods: Identification and Doslinetry by Electron Paramagnetic Resonance Spectroscopy. Final rept.

M. F. Desrosiers, 1989, 5p

Pub. in Jnl. of Agricultural and Food Chemistry 37, n1 p96-100 Jan/Feb 89.

PB91-194720 Not available NTIS National Inst. of Standards and Technology (NML), Co-Trial on ESR Identification and Estimates of

gamma-Ray and Electron Absorbed Doses Given to Meat and Bones.

Final rept.

M. F. Desrosiers, W. L. McLaughlin, L. A. Sheahen, N. J. F. Dodd, J. S. Lea, J. C. Evans, C. C. Rowlands, J. J. Raffi, and J. P. L. Agnel. 1990, 10p Pub. in International Jnl. of Food Science and Technology 25, p682-691 1990.

PB92-116672 Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Ionizing Radiation Div. Electron Spin Resonance for Monitoring Radiation-Processed Meats Containing Bone.

Final rept. M. F. Desrosiers. 1991, 2p Pub. in Jnl. of Food Science 56, n4 p1104-1105 1991. PB91-148957 Not available NTIS National Inst. of Standards and Technology (NML), Boulder, CO. Quantum Physics Div. Studies of H I and D I In the Local Interstellar

Medium. Final rept.

J. Murthy, R. C. Henry, H. W. Moos, A. Vidal-Madjar, J. L. Linsky, and C. Gry. 1990, 6p Pub. in Astrophysical Jnl. 356, n1 p223-228, 10 Jun 90.

PB91-148965 Not available NTIS National Bureau of Standards (NML), Boulder, CO. Quantum Physics Div.

Spatially Resolved Flares In RS CVn Systems. Final rept.

J. E. Neff, and J. L. Linsky. 1988, 4p Sponsored by National Aeronautics and Space Administration, Washington, DC. Pub. in Activity in Cool Star Envelopes, p175-178

Not available NTIS PB91-149021 National Inst. of Standards and Technology (NML), Boulder, CO. Quantum Physics Div.
Terminal Velocitles for a Large Sample of O Stars,
B Superglants, and Wolf-Rayet Stars.

Final rept. R. K. Prinja, M. J. Barlow, and I. D. Howarth. 1990,

Pub. in Astrophysical Jnl. 361, p607-620, 1 Oct 90.

Not available NTIS PB91-149286 National Inst. of Standards and Technology (NML), Boulder, CO. Quantum Physics Div. New Radio Detectors of Early-Type Pre-Main Sequence Stars. Final rept.

S. L. Skinner, A. Brown, and J. L. Linsky. 1990, 4p Pub. in Astrophysical Jnl. 357, pL39-L42, 10 Jul 90. PB91-149849 Not available NTIS National Inst. of Standards and Technology (NML), Boulder, CO. Quantum Physics Div.

Photospheres of Hot Stars. 4. Spectral Type O4. Final rept.

B. Bohannan, S. A. Voels, D. G. Hummer, and D. C. Abbott. 1990, 9p

Contract NAGW-766, Grant NSF-AST85-05919 See also PB89-202592. Sponsored by National Aeronautics and Space Administration, Washington, DC., and National Science Foundation, Washington, DC. Pub. in Astrophysical Jnl. 365, p729-737, 20 Dec 90.

PB91-158956 Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Atomic and Plasma Radiation Div. Working Group 1: Atomic Spectra and Wavelength Standards.

Final rept. W. C. Martin. 1988, 7p

Pub. in Transactions of the International Astronomical

Union, vXXA p111-117 1988.

PB91-174664 Not available NTIS National Inst. of Standards and Technology (NML), Boulder, CO. Quantum Physics Div.

Radio-Continuum Observations of a Variety of Cool Stars. Final rept.

S. A. Drake, J. L. Linsky, P. G. Judge, and M. Elitzur. 1991, 7p

Pub. in Astronomical Jnl. 101, n1 p230-236 Jan 91.

Not available NTIS PR91-174920 National Inst. of Standards and Technology (NML), Boulder, CO. Quantum Physics Div.

Detection of an Expanding H I Shell in the Old Su-pernova Remnant CTB 80. Final rept.

B. C. Koo, W. T. Reach, C. Heiles, R. A. Fesen, and J. M. Shull. 1990, 9p

Sponsored by National Science Foundation, Washing-

Pub. in Astrophysical Jnl. 364, n1 p178-186, 20 Nov

PB91-175026 Not available NTIS National Inst. of Standards and Technology (NML), Boulder, CO. Quantum Physics Div.

Ground-Truth Observations of Stellar Surface Structure from the Lunar Surface. Final rept.

J. L. Linsky. 1990, 10p Grant NAG5-82

Sponsored by National Aeronautics and Space Administration, Washington, DC.

Pub. in Proceedings of NASA Workshop on Astrophysics from the Moon, Annapolis, MD., February 1990, p168-177.

Not available NTIS PB91-175034 National Inst. of Standards and Technology (NML), Boulder, CO. Quantum Physics Div.

Some Concluding Thoughts for Cool Stars VI. Final rept.

J. L. Linsky. 1989, 4p Grant NAG5-82

Sponsored by National Aeronautics and Space Administration, Washington, DC.
Pub. in Proceedings of Cambridge Workshop on Cool

Stars, Stellar Systems, and the Sun (6th), Seattle, WA., September 12-14, 1989, p500-503.

PB91-175042 Not available NTIS National Inst. of Standards and Technology (NML), Boulder, CO. Quantum Physics Div.

Extension of the Class of Magnetic B Star Nonthermal Radio Sources.

Final rept.

J. L. Linsky, S. A. Drake, and T. S. Bastian. 1990, 4p Grant NAGW-1716

Sponsored by National Aeronautics and Space Administration, Washington, DC.

Pub. in Proceedings of Cambridge Workshop on Cool Stars, Stellar Systems, and the Sun (6th), Seattle, WA., September 12-14, 1989, p189-192 1990.

PB91-200873 Not available NTIS National Inst. of Standards and Technology (NML), Boulder, CO. Quantum Physics Div.

**Energy Distributions of Symbiotic Novae.** 

Final rept.

G. L. Bryan, and S. Kwok. 1991, 9p

Pub. in Astrophysical Jnl. 368, p252-260, 10 Feb 91.

PB91-202861 Not available NTIS National Inst. of Standards and Technology (NML), Boulder, CO. Quantum Physics Div. **Evolution of Infrared Carbon Stars.** 

Final rept.

S. J. Chan, and S. Kwok. 1990, 15p Sponsored by Natural Sciences and Engineering Research Council of Canada, Ottawa (Ontario). Pub. in Astronomy and Astrophysics 237, p354-368 **BEHAVIOR & SOCIETY** 

### Education, Law, & Humanitles

PB91-147744 Not available NTIS National Inst. of Standards and Technology (NCSL), Gaithersburg, MD. Systems and Software Technology Div

Interactive Courseware is Leading the Multimedia Movement.

Final rept.

J. Moline. 1990, 5p

Pub. in UNIX Technology Advisor 2, n7 p14-18 Jul 90.

PB91-148114 Not available NTIS National Bureau of Standards (NEL), Gaithersburg, MD. Center for Mfg. Engineering.

Agenda for Progress In Technology Education: A Personal View.

Final rept.

D. A. Swyt. 1987, 6p

Pub. in Technology Teacher 47, n1 p3-8 Sep/Oct 87.

PB91-158725 Not available NTIS National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Applied and Computational Mathematics Div.

Engineers' Statistical Literacy is Key to U.S. Competitiveness. Final rept.

J. T. Fong. 1989, 2p Pub. in ASME News 9, n5 pl and p5 Oct 89.

# **ATMOSPHERIC SCIENCES**

#### Physical Meteorology

PB91-189340 Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Gas and Particulate Science Div. Reference NO2 Calibration System for Ground-Based Intercomparisons during NASA's GTE/CITE II Mission.

Final rept.

A. Fried, L. Nunnermacker, B. Cadoff, R. Sams, N. Yates, W. Dorko, R. Dickerson, and E. Winstead. 1990, 8p

Pub. in Jnl. of Geophysical Research - Atmospheres 95, nD7 p139-146 1990.

PB91-236646 Not available NTIS National Inst. of Standards and Technology (CSTL). Gaithersburg, MD. Organic Analytical Research Div. Analysis of Wet Deposition (Acid Rain): Determination of the Major Anionic Constituents by Ion Chromatography.

Final rept.

R. A. Durst, W. Davison, K. Toth, J. E. Rother, M. E. Peden, and B. Griepink. 1991, 9p

Sponsored by International Union of Pure and Applied Chemistry, Oxford (England).

Pub. in Pure and Applied Chemistry 63, n6 p907-915

#### Job Training & Career Development

PC A04/MF A01 PR91-143362 National Inst. of Standards and Technology (NCTL), Gaithersburg, MD. Office Systems Engineering Group.
Multimedia Courseware in an Open Systems Environment: A Federal Strategy.

J. Moline, A. L. Hankinson, and L. A. Welsch. Dec 90, 55p NISTIR-4484

# BIOMEDICAL TECHNOLOGY & **HUMAN FACTORS** ENGINEERING

#### **Biomedical Instrumentation &** Bioengineering

Not available NTIS PB91-148668 National Inst. of Standards and Technology (MSEL), Gaithersburg, MD. Polymers Div.

### **BIOMEDICAL TECHNOLOGY & HUMAN FACTORS ENGINEERING**

### **Biomedical Instrumentation & Bioengineering**

Setting Reactions and Compressive Strengths of Calcium Phosphate Cements. Final rept.

Y. Fukase, E. D. Eanes, S. Takagi, L. C. Chow, and W. E. Brown. 1990, 5p

Sponsored by American Dental Association Health Foundation, Chicago, IL.

Pub. in Jnl. of Dental Research 69, n12 p1852-1856 Dec 90.

PB91-150029 Not available NTIS National Inst. of Standards and Technology (NML), Boulder, CO. Chemical Engineering Science Div. Low-Cost Low-Volume Carrler (Minilab) for Biotechnology and Fluids Experiments in Low Gravity. Final rept.

J. M. Cassanto, W. Holemans, T. Moller, P. Todd, R. M. Stewart, and Z. R. Korzun. 1990, 15p

Sponsored by National Aeronautics and Space Administration, Washington, DC. Commonwealth of Pennsyl-

Pub. in Space Commercialization: Platforms and Processing, v127 p199-213 1990.

PB91-158493 Not available NTIS National Inst. of Standards and Technology (MSEL),

Gaithersburg, MD. Polymers Div.

Visco-Elastic Deformation of Dental Porcelain and Porcelain-Metal Compatibility.

Final rept.

K. Asaoka, and J. A. Tesk. 1991, 6p Sponsored by National Inst. of Dental Research, Bethesda, MD.

Pub. in Dental Material 7, n1 p30-35 Jan 91.

PB91-158691 Not available NTIS National Inst. of Standards and Technology (MSEL), Gaithersburg, MD. Polymers Div.

Effect of Catalyst Structure on the Synthesis of a Dental Restorative Monomer.

Final rept. M. Farahani, A. D. Johnston, and R. L. Bowen. 1991, 6p

Sponsored by American Dental Association Health Foundation, Chicago, IL.

Pub. in Jnl. of Dental Research 70, n1 p67-71 Jan 91.

Not available NTIS National Inst. of Standards and Technology (MSEL), Gaithersburg, MD. Polymers Div.

Dental Blomaterials and Engineering Frontiers for the 90's.

Final rept.

J. A. Tesk, 1990, 2p

Pub. in Proceedings of the International Kyoto Symposium on Biomedical Engineering (3rd), Kyoto, Japan, November 20-21, 1990, p14-15.

PB91-174458 Not available NTIS National Inst. of Standards and Technology (IMSE), Gaithersburg, MD. Polymers Div.

Glass-Ceramic Inserts Anticipated for 'Megafilled' Composite Restorations. Final rept.

R. L. Bowen, F. C. Eichmiller, and W. A. Marjenhoff. 1991, 3p

Sponsored by American Dental Association Health Foundation, Chicago, IL. Pub. in Jnl. of the American Dental Association 122,

p71, 73, and 75, Mar 91.

Not available NTIS National Bureau of Standards (NEL), Gaithersburg, MD. Automated Production Technology Div.

Correction for Converting 2-CM(3)-Coupler Responses to Insertion Responses for Custom Inthe-Ear Non-Directional Hearing Aids.

Final rept. E. D. Burnett, and L. B. Beck. 1987, 6p Pub. in Ear Hear 8, p89S-94S Oct 87.

PB91-189555 Not available NTIS National Inst. of Standards and Technology (IMSE), Gaithersburg, MD. Polymers Div. Protective Coatings for Tooth Crowns.

Final rept.

A. D. Johnston, and R. L. Bowen. 1991, 3p Sponsored by American Dental Association Health Foundation, Chicago, IL.

Pub. in Jnl. of the American Dental Association 122, p49-51 Apr 91.

PB91-194654 Not available NTIS National Inst. of Standards and Technology (IMSE), Gaithersburg, MD. Polymers Div. Filler Systems Based on Calcium Metaphosphates.

Final rept. J. M. Antonucci, B. O. Fowler, and S. Venz. 1991, 6p

Sponsored by National Inst. of Dental Research, Bethesda, MD.

Pub. in Dental Materials 7, p124-129 Apr 91.

PB91-202879 Not available NTIS National Inst. of Standards and Technology (IMSE), Gaithersburg, MD. Polymers Div.

Self-Setting Calcium Phosphate Cements. Final rept.

L. C. Chow, S. Takagi, P. D. Costantino, and C. D. Friedman, 1991, 22p

Sponsored by American Dental Association Health Foundation, Chicago, IL.
Pub. in Materials Research Society Symposium Pro-

ceedings, v179 p3-24 1991.

PB91-204081 Not available NTIS National Bureau of Standards (IMSE), Gaithersburg, MD. Polymers Div.

Microstructure and Elastic Properties of Dental Resin and Resin-Based Glass-Reinforced Composites: XRD, SEM and Ultrasonic Methods. Final rept.

S. Singh, J. L. Katz, J. Antonucci, R. W. Penn, and J. A. Tesk. 1988, 6p Pub. in Materials Research Society Symposium Pro-

ceedings, v110 p599-604 1988.

Not available NTIS National Bureau of Standards (IMSE), Gaithersburg, MD. Polymers Div.

Dental Composite Resins: An Update.

Final rept.

S. Venz. 1987, 2p

Pub. in Modern Dentalab 5, n4 p27-28 Jun/Jul 87.

PB91-236539 Not available NTIS National Inst. of Standards and Technology (MSEL), Gaithersburg, MD. Polymers Div.

Development of an Adhesive System for Bonding to Hard Tooth Tissues.

Final rept.

R. L. Bowen, and W. A. Marjenhoff. 1991, 5p Sponsored by American Dental Association Health Foundation, Chicago, IL. Pub. in Jnl. of Esthetic Dentistry 3, n3 p86-90 May/Jun

PB91-237735 Not available NTIS National Inst. of Standards and Technology (MSEL), Gaithersburg, MD. Polymers Div.

Dentin-Bonding Molar Efficiency Using N-Phenyig-lycine, N-Phenyi-beta-Alanine, or N-Methyi-N-Phenyiglycine.

Final rept. R. E. Webb, and A. D. Johnston. 1991, 4p Sponsored by American Dental Association Health Foundation, Chicago, IL.

Pub. in Jnl. of Dental Research 70, n3 p211-214 Mar

### **Prosthetics & Mechanical Organs**

Not available NTIS PB91-194761 National Inst. of Standards and Technology (MSEL), Gaithersburg, MD. Polymers Div.

Metal-Polyslloxane Shields for Radiation Therapy of Maxillo-Facial Tumors.

Final rept.

M. Farahani, F. C. Eichmiller, and W. L. McLaughlin. 1991, 6p

Sponsored by American Dental Association Health Foundation, Chicago, IL.

Pub. in Medical Physics 18, n2 p273-278 Mar/Apr 91.

PB91-194787 Not available NTIS National Inst. of Standards and Technology (MSEL), Gaithersburg, MD. Metallurgy Div. Corrosion Principles in Dental Implantology.

Final rept.

A. C. Fraker, and F. Eichmiller, 1990, 10p Pub. in Clark's Clinical Dentistry, Chapter 50, v1 p1-10

PB92-117407 Not available NTIS National Inst. of Standards and Technology (MSEL), Gaithersburg, MD. Polymers Div.

Comparative Study of Bovine Pericardium Mineralization: A Basic and Practical Approach.

Final rept.

B. B. Tomazic, C. Siew, and W. E. Brown. 1991, 11p Sponsored by American Dental Association Health Foundation, Chicago, IL. Pub. in Cells and Materials 1, n3 p231-241 1991.

# **BUILDING INDUSTRY** TECHNOLOGY

### Architectural Design & Environmental Engineering

PB91-147082 Not available NTIS National Bureau of Standards (NEL), Gaithersburg,

MD. Building Physics Div.
Calibration Procedures for Infrared Imaging Systems for Building Diagnostics. Final rept.

Y. M. Chang, and R. A. Grot. 1986, 8p Sponsored by Department of Energy, Washington, DC. Pub. in Proceedings of International Symposium on Temperature Measurement in Industry and Science, Beijing, China, April 16-19, 1986, p277-284.

PB91-147140 Not available NTIS National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Building Environment Div. Second-Level Post-Occupancy Evaluation Analysis.

Final rept. B. L. Collins, W. Fisher, G. Gillette, and R. W. Marans. 1990, 24p See also DE89014520.

Pub. in Jnl. of the Illuminating Engineering Society, p21-44 1990.

Not available NTIS PB91-147561 National Bureau of Standards (NEL), Gaithersburg, MD. Building Physics Div.

### Architectural Design & Environmental Engineering

Design Heat Loss Factors for Basement and Siab Floors.

Final rept.

T. Kusuda, and J. W. Bean. 1985, 21p
Pub. in Thermal Insulation: Materials and Systems, ASTM ATP 922, p132-152 1985.

PB91-147876 Not available NTIS Mational Bureau of Standards (NEL), Gaithersburg, MD. Building Physics Div. Ventilation System Performance Evaluation Using

Tracer Gas Techniques.

Final rept.

A. K. Persily, and R. A. Grot. 1985, 17p

Sponsored by Department of Energy, Washington, DC.

Pub. in Proceedings of AIC Conference (6th) Ventilation Strategies and Measurement Techniques, Netherlands, September 16-19, 1985, p26.1-26.16.

PB91-158535 Not available NTIS National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Building Environment Div.

Conference Coverage: Papers Presentations Shine.

Final rept.

B. L. Collins. 1990, 3p

Pub. in Lighting Design and Application, p21-23 Oct

PB91-159079 Not available NTIS National Bureau of Standards (NEL), Gaithersburg, MD. Building Equipment Div.

Prototype Expert System for Diagnosing Moisture

Problems in Houses.

Final rept.

A. K. Persily. 1986, 10p Pub. in Proceedings of BTECC Symposium on Air Infil-tration, Ventilation, and Moisture Transfer, Fort Worth, TX., December 1986, 10p.

Not available NTIS PB91-159293 National Bureau of Standards (NEL), Gaithersburg, MD. Center for Building Technology.

Al: Does It Have a Place in Bullding Simulation.
Final rept.
R. N. Wright, and J. Hirsch. 1985, 6p
Pub. in Proceedings of Building Energy Simulation
Conference, Seattle, WA., August 21, 1985, p169-174.

PB91-167155 PC A03/MF A01 National Inst. of Standards and Technology, Gaithersburg, MD.

ZIP: The ZIP-Code insulation Program, Version 2.0. Economic insulation Levels for New and Existing Houses by Three-Digit Zip Code. Users' Guide and Reference Manual (Revised Edition).

S. R. Petersen. Jan 91, 36p NISTIR-88/3801-1 See also PB89-159446 and PB89-151765. Sponsored by Department of Energy, Washington, DC. Building Systems Div.

Not available NTIS PB91-174607 National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Building Environment Div. Refrigerant Charge Effects on Heat Pump Performance. Final rept.

G. S. Damasceno, P. A. Domanski, S. Rooke, and V.

G. S. Damasceno, P. A. Domanski, S. Rooke, and V. Goldschmidt. 1991, 6p Sponsored by Ranco Controls, Erving, TX. Pub. in ASHRAE (American Society of Heating, Refrigerating and Air-Conditioning Engineers) Transactions, v97 pt1 6p 1991.

Not available NTIS PB91-174649 National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Building Environment Div.

Simulation of an Evaporator with Nonuniform One-Dimensional Air Distribution.

P. A. Domanski. 1991, 10p

Sponsored by Department of Energy, Washington, DC. Pub. in ASHRAE (American Society of Heating, Refrigerating and Air-Conditioning Engineers) Transactions, v97 pt1 10p 1991.

PB91-175307 Not available NTIS National Bureau of Standards (NEL), Gaithersburg, MD. Building Physics Div. Airtightness of Office-Building Envelopes.

Final rept.

A. K. Persily, and R. A. Grot. 1985, 19p Sponsored by Department of Energy, Washington, DC. Pub. in Proceedings of ASHRAE/DOE/BTECC Conference on Thermal Performance of the Exterior Envelopes of Buildings III, Clearwater Beach, FL., December 1985, p125-143.

Not available NTIS PB91-175471 National Bureau of Standards (NEL), Gaithersburg, MD. Building Physics Div.

Measurement of Thermai Characteristics of Office Bulidinas.

Final rept.

L. K. Norford, A. Rabl, R. H. Socolow, and A. K. Persily. 1985, 17p

Sponsored by Department of Energy, Washington, DC. Pub. in Proceedings of ASHRAE/DOE/BTECC Conference on Thermal Performance of the Extenor Envelopes of Buildings III, Clearwater Beach, FL., December 1985, p272-288.

Not available NTIS PB91-187286 National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Building Environment Div. BACnet Communication Protocol for Building Automation Systems. Final rept.

S. T. Bushby, and H. M. Newman. 1991, 6p Pub. in ASHRAE (American Society of Heating, Refrigeration and Air-Conditioning Engineers) Jnl., p14-15 and 18-21 Apr 91.

PC A06/MF A01 PB91-187732 National Inst. of Standards and Technology (BFRL), Gaithersburg, MD. Draft Abstract Test Suite for Determining Con-

formance to the BACnet Protocol. S. T. Bushby. Apr 91, 119p NISTIR-4563

PC A04/MF A01 PB91-187757 National Inst. of Standards and Technology (BFRL),

Raithersburg, MD.

Intelligent Bullding Technology In Japan.

A. Rubin. Apr 91, 69p NISTIR-4546

Sponsored by Department of Commerce, Washington, DC. Technology Administration, and Electric Power Research Inst., Palo Alto, CA.

Not available NTIS PB91-194936 National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Building Environment Div.
Rule-Based Diagnostic Method for HVAC Fault Detection.

Final rept. S. T. Liu, and G. E. Kelly. 1989, 6p Pub. in Proceedings of Building Simulation '89, Vancouver, British Columbia, Canada, June 23-24, 1989, p319-324.

Not available NTIS PB91-195388 National Bureau of Standards (NEL), Gaithersburg, MD. Building Environment Div.

Prediction and Fauit Detection of Building Energy Consumption Using Muiti-input, Single-Output Dynamicai Modei.

Final rept.

J. Pakanen. 1988, 11p

Sponsored by Technical Research Center of Finland, Helsinki, and Ministry of Trade and Industry, Helsinki (Finland).

Pub. in Proceedings of International Symposium on Energy Options for the Year 2000 Contemporary Concepts in Technology and Policy, Newark, DE., September 14-17, 1988, v3 p3.57-3.67.

PB91-195438 Not available NTIS National Bureau of Standards (NEL), Gaithersburg, MD. Building Equipment Div.

Diagnostic Techniques for Evaluating Office Build-

Ing Envelopes. Final rept.

A. K. Persily, R. A. Grot, J. B. Fang, and Y. M. Chang. 1988, 20p

Sponsored by Public Buildings Service, Washington,

Pub. in Proceedings of ASHRAE (American Society of Heating, Refrigerating and Air-Conditioning Engineers) Winter Meeting, Dallas, TX., January 30, 1988, v94 pt1 p987-1006.

PB91-206698 PC A03/MF A01 National Inst. of Standards and Technology (BFRL), Gaithersburg, MD.

Indoor Ventiliation Requirements for Manufactured Housing.

D. M. Burch. May 91, 29p NISTIR-4574

Sponsored by Department of Housing and Urban Development, Washington, DC.

PC A06/MF A01 PB91-206755 National Inst. of Standards and Technology (BFRL),

Gaithersburg, MD.

Abstracts of Daylighting Research.

A. I. Rubin, R. Saraiji, R. McCluney, M. Huggins, and C. Emnich. May 91, 120p NISTIR-4578

Prepared in cooperation with Florida Solar Energy Center, Cape Canaveral. Sponsored by Electric Power Research Inst., Palo Alto, CA., and Lighting Research Inst., New York.

PB91-216655 PC 403/MF 401 National Inst. of Standards and Technology (BFRL), Gaithersburg, MD. Variable Air Volume System Design Gulde.

J. Y. Kao. Jun 91, 49p NISTIR-4605

Sponsored by Public Buildings Service, Washington, DC.

PB91-231563 PC A04/MF A01 National Inst. of Standards and Technology (BFRL), Gaithersburg, MD.

Daylight Research Requirements. Workshop Proceedings. Held in Baltimore, Maryland on August 1-2, 1990.

A. Rubin, Jul 91, 65p NISTIR-4639

Sponsored by Electric Power Research Inst., Palo Alto, CA., and Lighting Research Inst., New York, NY.

PB91-237800 Not available NTIS National Inst. of Standards and Technology (EEEL), Gaithersburg, MD. Electronics and Electrical Engineer-

ing Lab. Office.

Effect of Velling Rejections on Vision of Colored Objects.

Final rept.

J. A. Worthey, 1989, 6p

Pub. in Jnl. of the Illuminating Engineering Society 18, n2 p10-15 1989.

### Architectural Design & Environmental Engineering

PB91-237818 Not available NTIS National Inst. of Standards and Technology (EEEL), Gaithersburg, MD. Electronics and Electrical Engineering Lab. Office.

Light Source Area, Shading, and Giare. Final rept.

J. A. Worthey. 1991, 8p Pub. in Jnl. of the Illuminating Engineering Society 20, n2 p29-36 1991.

PB91-237826 Not available NTIS National Inst. of Standards and Technology (EEEL), Gaithersburg, MD. Electronics and Electrical Engineering Lab. Office. Role of Theory in Lighting Research and Design.

J. A. Worthey. 1991, 3p Pub. in Lighting Design and Application 21, n7 p15-17

PB91-240747 PC A04/MF A01 National Inst. of Standards and Technology (BFRL),

Gaithersburg, MD.
Preilminary Results of the Environmental Evaluation of the Federal Records Center in Overland

A. K. Persily, W. S. Dols, S. J. Nabinger, and S. Kirchner. Jul 91, 52p NISTIR-4634 Sponsored by Public Buildings Service, Washington, DC.

PB92-108984 PC A03/MF A01 National Inst. of Standards and Technology (BFRL), Gaithersburg, MD.

Cone Calorimeter Rate of Heat Release Measurements for Uphoistered Composites of Polyurethane Foams.

K. M. Villa, and V. Babrauskas. Aug 91, 40p NISTIR-

PB92-109156 PC A09/MF A02 National Inst. of Standards and Technology (BFRL), Gaithersburg, MD.

international Fire Detection Bibliography, 1975-1990.

R. W. Bukowski, and N. H. Jason. Sep 91, 185p NISTIR-4661

See also COM-74-50638. Sponsored by National Fire Protection Research Foundation, Quincy, MA.

Concept of the Calculus of Fire Safety. R. L. Smith. Nov 90, 23p NISTIR-4459

PB91-143297 PC A04/MF A01 Pennsylvania State Univ., University Park. Dept. of Me-

chanical Engineering. Heat Flux, Mass Loss Rate and Upward Flame Spread for Burning Vertical Walls (1990). Annual rept.

A. K. Kulkarni, C. I. Kim, and C. H. Kuo. Nov 90, 65p NIST/GCR-90/584

Grant NANB8D0849

Sponsored by National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Center for Fire Research.

PB91-144394 PC A03/MF A01 National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Center for Fire Research. Using the Harvard/NIST Mark VI Fire Simulation. J. A. Rockett. Nov 90, 45p NISTIR-4464

### **Building Standards & Codes**

PB91-190066 Not available NTIS National Inst. of Standards and Technology, Gaithersburg, MD. Lab. Accreditation Program. Piumbing Test Lab Accreditation.

Final rept.

J. A. Swaffield, and L. S. Galowin, 1991, 5p Pub. in Heating/Piping/Air Conditioning 63, n3 p73-77

PB91-144436 PC A06/MF A01 National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Center for Fire Research.

Programmer's Reference Manual for CFAST, the Unified Model of Fire Growth and Smoke Trans-

port.
Technical note (Final).
W. W. Jones, and G. P. Forney. Nov 90, 107p NIST/

Also available from Supt. of Docs. as SN003-003-03041-4.

#### **Building Equipment, Furnishings, &** Maintenance

PB91-161984 Not available NTIS National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Building Environment Div. Visibility of Exit Signs and Directional Indicators.

Final rept. B. L. Collins, 1991, 17p

Sponsored by National Electrical Mfrs. Association, Washington, DC.

Pub. in Jnl. of the Illuminating Engineering Society, p117-133 1991.

PB91-194811 Not available NTIS National Inst. of Standards and Technology (BFRL), Gaithersburg, MD.

Meeting the Chailenges of a Giobai Market - Construction Standards, Testing and Certification. Final rept.

J. G. Gross. 1991, 4p

Pub. in Construction Business Review, p31-34 Mar/ Apr 91.

Not available NTIS PB91-146977 National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Fire Measurement and Research

Heat Release Rate: The Single Most important Variable in Fire Hazard.

Final rept.

V. Babrauskas, and R. D. Peacock. 1990, 14p
Pub. in Proceedings of Fall Meeting Fire Safety Developments and Testing: Toxicity, Heat Release, Product
Development, Combustion Corrosivity, Fire Retardant Chemicals Association, Ponte Vedra Beach, FL., October 20-25, 1990, p67-80.

PB91-187260 Not available NTIS National Inst. of Standards and Technology (BFRL), Gaithersburg, MD. improving the Fire Performance of Building Contents.

R. W. Bukowski, 1991, 5p Pub. in Construction Specifier 44, n2 p42-46 Feb 91.

PB91-216614 PC A03/MF A01 National Inst. of Standards and Technology (BFRL), Gaithersburg, MD. Direct Digital Control Based Building Automation System Design Criteria.

J. Y. Kao. Jun 91, 37p NISTIR-4604

Sponsored by Public Buildings Service, Washington, DC.

PB91-147215 Not available NTIS Notional Inst. of Standards and Technology (NEL), Gaithersburg, MD. Fire Science and Engineering Div. Review of Four Compartment Fires with Four Compartment Fire Models. Final rept.

Final rept.

S. Deal. 1990, 20p

Pub. in Proceedings of Fire Retardant Chemicals Association/Fire Safety Developments and Testing Fall Conference, Ponte Vedra Beach, October 21-24, 1990, p1-20.

Not available NTIS National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Building Environment Div.

Measured Performance of Residential Water Heaters Using Existing and Proposed Department of **Energy Test Procedures.** 

Final rept. A. H. Fanney. 1990, 8p

Sponsored by Department of Energy, Washington, DC. Pub. in ASHRAE (American Society of Heating, Refrig-erating and Air-Conditioning Engineers) Transactions, v96, pt1 p288-295 Jan 90.

PB91-216697 PC A04/MF A01 National Inst. of Standards and Technology (BFRL), Gaithersburg, MD. Guide Specification for Direct Digital Control **Based Building Automation System.** 

J. Y. Kao. Jun 91, 72p NISTIR-4606

Sponsored by Public Buildings Service, Washington,

PB91-147439 Not available NTIS National Bureau of Standards (NEL), Gaithersburg, MD. Building Materials Div.

Design of High Strength Cement-Based Materials.

Part 2. Microstructure.

Final rept.

H. M. Jennings. 1988, 6p See also PB90-152653. Sponsored by Air Force Engineering and Services Center, Tyndall AFB, FL. Pub. in Materials Science and Technology 4, n4 p285-290 Apr 88.

PB91-206664 PC A08/MF A01 Dayton Univ., OH. Research Inst. Technical Reference and User's Guide for FAST/ FFM Version 3.

Technical rept. (Final). M. A. Dietenberger. May 91, 153p NIST/GCR-91/

Grant NANB-SD-0557

Sponsored by National Inst. of Standards and Technology (BFRL), Gaithersburg, MD.

### Construction Materials, Components, & Equipment

PB91-132134 PC A03/MF A01 National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Center for Fire Research.

Not available NTIS PB91-147611 National Bureau of Standards (NEL), Gaithersburg, MD. Building Environment Div.

### Construction Materials, Components, & Equipment

Temperature Measurement of Glass Subjected to Solar Radiation.

Final rept.

Pub. in ASHRAE (American Society of Heating, Refrigerating and Air-Conditioning Engineers) Transactions 94, pt2 p1350-1359 1988.

PB91-147835 Not available NTIS National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Fire Measurement and Research

Forced Smolder Propagation and the Transition to Flaming in Cellulosic Insulation.

Final rept.

T. J. Ohlemiller. 1990, 12p See also PB86-166657. Sponsored by Department of Energy, Washington, DC. Pub. in Combustion and Flame 81, n3-4 p354-365 Sep

PB91-147843 Not available NTIS National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Fire Measurement and Research

Smoldering Combustion Propagation Through a Permeable Horizontal Fuel Layer.

T. J. Ohlemiller. 1**99**0, 13p Sponsored by Department of Energy, Washington, DC. Pub. in Combustion and Flame 81, n3-4 p341-353 Sep

Not available NTIS PB91-147975 National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Building Equipment Div.

Evaluation of Fumed-Silica Insulation for a Ther-

mal Conductivity Standard Reference Material. Final rept. B. G. Rennex, T. A. Somers, T. K. Faison, and R. R.

Zarr. 1990, 12p Sponsored by Department of Energy, Washington, DC. Office of Buildings Energy R and D. Pub. in Insulation Materials, Testing, and Applications,

ASTM STP 1030, p3-14 1990.

PB91-148510 PC A04/MF A01 National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Center for Fire Research.

Refinement of a Model for Fire Growth and Smoke Transport.

Technical note (Final).

W. W. Jones. Nov 90, 53p NIST/TN-1282 Also available from Supt. of Docs. as SN003-003-03043-1.

PB91-149153 Not available NTIS National Bureau of Standards (NEL), Gaithersburg, MD. Building Materials Div.

Further Investigation of the Effect of Application Parameters on Adhesive-Bonded Seams of Single-Ply Roof Membranes.

Final rept.

W. J. Rossiter. 1988, 7p Sponsored by Corps of Engineers, Washington, DC. Pub. in Materials and Structures 21, p243-249 1988.

PB91-157172 PC A03/MF A01 National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Center for Building Technology. Pulse-Echo Ultrasonic Evaluation of the Integrity of Seams of Single-Ply Roofing Membranes: Laboratory Evaluation of a Prototype Test Apparatus. H. Watanabe, and W. J. Rossiter. Dec 90, 47p NISTIR-4424

Prepared in cooperation with Takenaka Corp., Tokyo (Japan). Technical Research Lab. Sponsored by Civil Engineering Lab. (Navy), Port Hueneme, CA. PB91-158543 Not available NTIS National Bureau of Standards (NEL), Gaithersburg, MD. Fire Safety Technology Div.

Compartment Fire-Generated Environment and Smoke Filling.

Final rept.

L. Y. Cooper. 1988, 23p Pub. in SFPE Handbook of Fire Protection Engineering, Chapter 7, p2-116-2-138 1988.

PB91-158998 Not available NTIS National Bureau of Standards (NEL), Gaithersburg, MD. Fire Safety Technology Div.
Algorithm for the Mass-Loss Rate of a Burning

Wall.

H. E. Mitter. 1989, 10p Pub. in Proceedings of the International Symposium on Fire Safety Science (2nd), Tokyo, Japan, June 1988, p179-188 1989.

PB91-159038 Not available NTIS National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Fire Measurement and Research

Five Small Flaming Fire Tests in a Simulated Hospital Patient Room Protected by Automatic Fire

Final rept. K. A. Notarianni, 1990, 23p

Pub. in Report of Test FR 3982, p1-23, 31 Oct 90.

PC A03/MF A01 PB91-159731 National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Center for Building Technology. Pulse-Echo Ultrasonic Evaluation of the Integrity of Seams of Single-Ply Roofing Membranes: Results of Field Investigations and Recommendations.

H. Watanabe, and W. J. Rossiter. Nov 90, 42p

NISTIR-4425

See also PB91-157172. Prepared in cooperation with Takenaka Corp., Tokyo (Japan). Technical Research Lab. Sponsored by Civil Engineering Lab. (Navy), Port Hueneme, CA.

PB91-162115 Not available NTIS National Inst. of Standards and Technology (NML), Boulder, CO. Chemical Engineering Science Div.
Automated High-Temperature Guarded-Hot-Plate
Apparatus for Measuring Apparent Thermal Conductivity of Insulations between 300 and 750 K. Final rept.

J. G. Hust, B. J. Filla, J. A. Hurley, and D. R. Smith. 1990, 13p

Contract ORNL/IA-21428

See also PB88-242060. Sponsored by Oak Ridge National Lab., TN.
Pub. in Insulation Materials, Testing, and Applications,

ASTM STP 1030, p710-722 1990.

PB91-162149 Not available NTIS National Bureau of Standards (NEL), Gaithersburg,

MD. Center for Building Technology.

Computer Simulated Hydration of a Cement Model. Final rept.

S. K. Johnson, and H. M. Jennings. 1986, 10p Pub. in CIB.86 Proceedings, Washington, DC., September 22-26, 1986, v6 p2086-2095.

PB91-167189 PC A05/MF A01 National Inst. of Standards and Technology (NCSL),

Review of Research Literature on Masonry Shear

C. W. C. Yancey, S. G. Fattal, and R. D. Dikkers. Feb 91, 100p NISTIR-4512 Portions of this document are illegible.

PB91-167197 PC A04/MF A01 Harvard Univ., Cambridge, MA. Div. of Applied Sciences.

Celling Jet in Fires.

Annual rept. H. W. Emmons. Dec 90, 51p NIST/GCR-90/582 Grant NIST-60NANB8D0845

Sponsored by National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Center for Fire Research

PB91-167304 PC A03/MF A01 National Inst. of Standards and Technology (BFRL), Gaithersburg, MD.
Computational Models Developed for the Corro-

sion of Prestressing Steel. S. T. Wu, and J. R. Clifton. Mar 91, 20p NISTIR-4455 Prepared in cooperation with Air Force Office of Scientific Research, Bolling AFB, DC.

PB91-167676 PC A03/MF A01 National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Center for Fire Research.

Modern Test Methods for Flammability. V. Babrauskas. Jun 90, 25p NISTIR-4326

PB91-174573 Not available NTIS National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Fire Science and Engineering Div. Celling Jet-Driven Wall Flows in Compartment

Final rept.

L. Y. Cooper. 1988, 12p
Pub. in Combustion Science and Technology 62, n4-6 p285-296 1988.

PB91-174789 Not available NTIS National Bureau of Standards (NEL), Gaithersburg, MD. Fire Safety Technology Div.

Letter to the Editor of Standardization News

Final rept. D. Gross, 1987, 2p

Pub. in ASTM (American Society for Testing and Materials) Standardization News, p7-8 Feb 87.

Not available NTIS PB91-175315 National Bureau of Standards (NEL), Gaithersburg, MD. Building Materials Div.

Application of CCRL Data in the Development of Cement Standards.

Final rept.

J. H. Pielert, and C. B. Spring. 1987, 12p

Sponsored by American Society for Testing and Materials, Philadelphia, PA.

Pub. in Uniformity of Cement Strength, ASTM STP 961, p30-41 1987.

Not available NTIS PB91-175422 National Bureau of Standards (NEL), Gaithersburg, MD. Fire Measurement and Research Div. Smoke Production and Properties.

G. W. Mulholland. 1988, 10p Pub. in SFPE (Society of Fire Protection Engineers) Handbook of Fire Protection Engineering, Chapter 25, p368-377 1988.

PB91-187278 Not available NTIS National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Building Environment Div.
Comparison of Two Test Methods for Determining
Transfer Function Coefficients for a Wall Using a Calibrated Hot Box.

Final rept.

D. B. Burch, B. A. Licitra, and R. R. Zarr. 1990, 8p Sponsored by Department of Energy, Washington, DC. Pub. in Jnl. of Heat Transfer 112, n1 p35-42 Feb 90.

### Construction Materials, Components, & Equipment

PC A04/MF A01 National Inst. of Standards and Technology (BFRL), Gaithersburg, MD.

Bullding and Fire Research Laboratory Publica-

tions, 1990.

N. H. Jason. Apr 91, 69p NISTIR-4562

Also available from Supt. of Docs. See also PB90-219809.

PB91-189324 Not available NTIS National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Automated Production Technology

Acoustic Technique for Evaluation of Thermai insulation.

Final rept.

D. R. Flynn, D. J. Evans, and T. W. Bartel. 1990, 24p Pub. in Insulation, Materials, Testing, and Applications, ASTM STP 1030, p319-342 1990.

Not available NTIS PB91-189993 National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Building Materials Div.
Fleld Testing of Adhesive-Bonded Seams of Rubber Roofing Membranes. Final rept.

W. J. Rossiter, J. F. Seiler, and P. E. Stutzman.

1989, 10p Pub. in Proceedings of Conference on Roofing Technology (9th), Gaithersburg, MD., May 4-5, 1989, p78-

PB91-190124 Not available NTIS National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Building Environment Div.

Thermal Conductivity of Fumed Silica Board at Room Temperature.

Final rept. R. R. Zarr, and T. A. Somers. 1990, 13p Sponsored by Department of Energy, Washington, DC. Pub. in Thermal Conductivity 21, p247-259 1990.

PB91-194696 Not available NTIS National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Building Environment Div.

Evaluation of the Heat Flux Transducer Technique

for Measuring the Thermal Performance of Walls.

Sponsored by Department of Energy, Washington, DC.
Pub. in Proceedings of Conference on In-situ Heat Flux Measurements in Buildings Applications and Interpretations of Results, Hanover, NH., May 22-23, 1990, p111-121 1991.

Not available NTIS PB91-203521 National Bureau of Standards (NEL), Gaithersburg, MD. Building Materials Div.

NBS Research on Protective Coatings for Bulld-Ings and Structures. Final rept.

L. W. Masters. 1985, 2p

Pub. in Jnl. of Protective Coatings and Linings 2, n3 p15-16 Mar 85.

PB91-203935 Not available NTIS National Bureau of Standards (NEL), Gaithersburg,

MD. Building Materials Div.
Use of Nondestructive Methods for Inspection of Single-Ply Roofing Membranes.

Final rept. W. J. Rossiter, and J. R. Clifton. 1986, 10p Sponsored by Naval Civil Engineering Lab., Port Hue-

neme, CA Pub. in Durability of Building Materials 3, p343-352

PC A04/MF A01 PB91-206680 Factory Mutual Research Corp., Norwood, MA.

Sprinkler/Hot Layer Interaction. Technical rept. Sept. 1990. G. Heskestad. May 91, 56p NIST/GCR-91/590 Grant NANB-OD1066

Sponsored by National Inst. of Standards and Technology (BFRL), Gaithersburg, MD.

PB91-216648 PC A04/MF A01 National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Robot Systems Div.
Description of a Vibration Compensation System for the Small Scale Model Robot Crane Project. R. Bostelman, Jul 91, 70p NISTIR-4595

PB91-216689 PC A05/MF A01 National Inst. of Standards and Technology (BFRL),

Against list. of standards and rectiliology (BFAL), Gaithersburg, MD.

Applications of the Generalized Global Equivalence Ratio Model (GGERM) for Predicting the Generation Rate and Distribution of Products of Combustion in Two-Layer Fire Environments: Methane and Hexanes.

L. Y. Cooper. Jun 91, 78p NISTIR-4590

PC A08/MF A02 PB91-216788 National Inst. of Standards and Technology (BFRL), Gaithersburg, MD. Bullding and Fire Research Project Summarles,

1991. N. J. Raufaste. Jun 91, 155p NISTIR-4582 See also PB91-187807.

PB91-237479 Not available NTIS National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Building Materials Div. Microstructural Aspects of the Fracture of Hardened Cement Paste.

Final rept. L. Struble, P. Stutzman, and E. Fuller. 1989, 5p Contract AFOSR-ISSA88-0039 Sponsored by Air Force Office of Scientific Research, Bolling AFB, DC.

Pub. in Jnl. of the American Chemical Society 72, n12 p2295-2299 1989.

PB92-108919 PC A03/MF A01 National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Center for Fire Research. FPETOOL User's Guide.

H. E. Nelson. Oct 90, 38p NISTIR-4439 Contract GSA/PBS-87-03

Sponsored by Public Buildings Service, Washington,

PB92-108976 PC A03/MF A01 National Inst. of Standards and Technology (BFRL), Gaithersburg, MD. Mathematical Modeling of Enclosure Fires.
H. E. Mitler. May 91, 47p NISTIR-90-4294
See also PB90-129867 and PB81-110520.

PB92-112556 PC A03/MF A01 California Univ., Berkeley. Dept. of Mechanical Engi-

neering.
Users' Gulde to BREAK1, the Berkeley Algorithm for Breaking Window Glass In a Compartment Fire. A. A. Joshi, and P. J. Pagni. Oct 91, 29p NIST/GCR-91/596

Grant NANB-80848

See also PB90-244443 and PB88-111810. Sponsored by National Inst. of Standards and Technology (BFRL), Gaithersburg, MD.

PC A04/MF A01 PB92-116334 National Inst. of Standards and Technology, Gaithersburg, MD.

Analysis of Moisture Accumulation in a Wood Frame Wall Subjected to Winter Climate. D. M. Burch, and W. C. Thomas. Oct 91, 57p NISTIR-4674

See also DE90014155 and PB85-199248. Sponsored by Department of Energy, Washington, DC.

PB92-116342 PC A03/MF A01 National Inst. of Standards and Technology (NCSL), Gaithersburg, MD.

Ultimate Strength of Masonry Shear Walls: Predictions versus Test Results. S. G. Fattal, and D. R. Todd. Oct 91, 47p NISTIR-

See also PB91-167189.

PR92-116458 Not available NTIS National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Fire Measurement and Research

Large-Scale Validation of Bench-Scale Fire Toxicity Tests. Final rept.

V. Babrauskas, R. H. Harris, E. Braun, B. C. Levin, M. Paabo, and R. G. Gann. 1991, 24p Pub. in Jnl. of Fire Sciences 9, n2 p125-148 Mar/Apr

PB92-116557 Not available NTIS National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Structures Div.

Impact-Echo: A New Method for Inspecting Construction Materials.

Final rept.

N. J. Carino, and M. Sansalone. 1990, 15p Pub. in Nondestructive Testing and Evaluation for Manufacturing and Construction, p209-223 1990.

Not available NTIS PB92-116821 National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Building Materials Div. Integrated Knowledge Systems for Concrete Science and Technology.

Final rept. G. Frohnsdorff. 1989, 18p See also PB89-176119.

Pub. in Materials Science of Concrete I, p315-332 1989

PB92-123033 PC A07/MF A02 National Inst. of Standards and Technology (BFRL), Gaithersburg, MD.

Fiammability Characterization of Foam Plastics. T. G. Cleary, and J. G. Quintiere. Oct 91, 143p NISTIR-4664

Sponsored by Society of the Plastics Industry, Washington, DC.

### Structural Analyses

PB91-134668 Not available NTIS National Bureau of Standards (NEL), Gaithersburg,

MD. Structures Div.
Preliminary Dynamic Analyses of the Ministry of Agriculture Building.

Final rept.

W. C. Stone, and N. R. Cuevas. 1986, 22p Pub. in Proceedings of International Conference on Mexico Earthquakes - 1985: Factors Involved and Lessons Learned, Mexico City, Mexico, September 19-21, 1986, p233-254.

8

### Structural Analyses

PB91-167239 PC A03/MF A01 National Inst. of Standards and Technology (BFRL), Gaithersburg, MD.

Measurement of Structural Response Characteristics of Full-Scale Buildings: Selection of Struc-

R. D. Marshall, L. T. Phan, and M. Celebi. Feb 91, 22p NISTIR-4511

Prepared in cooperation with Geological Survey, Menlo Park, CA. Branch of Engineering Seismology and Geology.

PB91-184846 PC A14/MF A02 National Inst. of Standards and Technology (BFRL), Gaithersburg, MD.

Proceedings of a Workshop on Evaluation, Repair, and Retrofit of Structures. U.S.-Japan Panel on Wind and Selsmic Effects, UJNR. Held in Galthers-burg, MD., USA, on May 12-14, 1990. J. O. Jirsa. Apr 91, 305p NISTIR-4515

Prepared in cooperation with Texas Univ. at Austin. Sponsored by National Science Foundation, Washington, DC.

Not available NTIS PB91-204057 National Bureau of Standards (NEL), Gaithersburg, MD. Structures Div.

investigation of the Collapse of L'Ambiance Plaza. Final rept.

C. F. Scribner, and C. G. Culver. 1988, 22p Pub. in Jnl. of Performance of Constructed Facilities 2, n2 p58-79 May 88.

PB91-204206 Not available NTIS National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Center for Building Technology. Research and Technology for Structural Engineering Productivity.

Final rept. R. N. Wright. 1991, 7p

Sponsored by American Society of Civil Engineers, New York.

Pub. in Proceedings of Structures Congress, Indianapolis, IN., April 29-May 1, 1991, p1-7.

PC A03/MF A01 PB91-206714 National Inst. of Standards and Technology (BFRL), Gaithersburg, MD.

Long Term Performance of Rubber in Selsmic and

Non-Selsmic Bearings: A Literature Review. J. W. Martin, Jun 91, 30p NISTIR-4613

PB91-222570 PC A05/MF A01 National Inst. of Standards and Technology (NEL), Gaithersburg, MD.

Gattnersburg, MD.
Performance of 1/3-Scale Model Precast Concrete
Beam-Column Connections Subjected to Cyclic Inelastic Loads. Report No. 2.
G. S. Cheok, and H. S. Lew. Jun 91, 85p NISTIR-

4589

See also PB91-107623.

Not available NTIS PB91-236588 National Inst. of Standards and Technology (BFRL), Gaithersburg, MD. Structures Div.

Performance of Precast Concrete Beam-to-Column Connections Subject to Cyclic Loading. Final rept.

G. S. Cheok. 1991, 12p

Pub. in PCI (Prestressed Concrete Institute) Jnl. 36, n3 p56-67 May/Jun 91.

Not available NTIS PB91-237834 National Inst. of Standards and Technology (BFRL), Gaithersburg, MD. Building and Fire Research Lab. Office.

Assessment: U.S. Office Building of Moscow. Final rept.

R. N. Wright, N. J. Carino, J. G. Gross, and M.

Sansalone. 1989, 14p
Pub. in Jnl. of Performance of Constructed Facilities 3, n1 p2-15 Feb 89.

PB92-116425 PC A99/MF A06 National Inst. of Standards and Technology (BFRL),

Gaithersburg, MD.
Wind and Selsmic Effects. Proceedings of the Joint Meeting of the U.S.-Japan Cooperative Program in Natural Resources Panel on Wind and Selsmic Effects (23rd). Held in Tsukuba, Japan, on May 14-17, 1991. Special pub. (Final).

N. J. Raufaste. Sep 91, 639p NIST/SP-820 N. J. Haulaste. Sep 91, 639p NG173F-620 Also available from Supt. of Docs. as SN003-003-03107-1. See also DE91005427 and PB91-107094. Engineering Analysis of Fire Development in the Hospice of Southern Michigan, December 15, 1985.

Pub. in Proceedings of International Symposium on Fire Safety Science (2nd), Tokyo, Japan, June 13-17, 1988, p927-938 1989.

Not available NTIS PB91-203620 National Bureau of Standards (NEL), Gaithersburg, MD. Fire Science and Engineering Div. Water Spray Suppression of Fully-Developed Wood Crib Fires in a Compartment.

Final rept. J. Milke, D. Evans, and W. Hayes. 1985, 63p See also PB88-232871. Sponsored by Federal Emergency Management Agency, Washington, DC. Pub. in Report of Test FR 3956, pt1 p1-63 Jan 85.

PC A08/MF A02 PB91-216820 National Inst. of Standards and Technology (BFRL), Gaithersburg, MD. **Bullding Technology Publications 1986-1989.** Final rept.

T. A. Somers. Jun 91, 164p NISTIR-4616 See also PB88-110911.

General

Not available NTIS PB91-149302 National Bureau of Standards (NEL), Gaithersburg, MD. Center for Fire Research. Application of Fire Research.

Final rept.

J. E. Snell. 1986, 20p Pub. in Proceedings of International Meeting of Fire Research and Test Centers, Avila, Spain, October 7-9, 1986, p97-116.

PB91-159764 PC A04/MF A01 National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Center for Computing and Applied Mathematics.

NIST 'Building Life-Cycle Cost' (BLCC) Program (Version 3.0). User's Guide and Reference Manual. S. R. Petersen. Jan 91, 54p NISTIR-4481

Sponsored by Department of Energy, Washington, DC. Federal Energy Management Program Staff.

PB91-167254 PC A03/MF A01 National Inst. of Standards and Technology (BFRL), Gaithersburg, MD.

**Experimental Study of Top Vented Compartment** 

K. M. Tu. Feb 91, 34p NISTIR-4499

PB91-167270 PC A06/MF A01 National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Center for Fire Research. Role of Bench-Scale Test Data In Assessing Real-Scale Fire Toxicity.

Technical note (Final). V. Babrauskas, R. H. Harris, E. Braun, B. Levin, M. Paabo, and R. G. Gann. Jan 91, 113p NIST/TN-

Also available from Supt. of Docs.

PB91-178848 PC A03/MF A01 National Inst. of Standards and Technology (CAML), Gaithersburg, MD.

Boussinesq Algorithm for Enclosed Buoyant Convection in Two Dimensions.
R. G. Rehm, H. C. Tang, H. R. Baum, J. S. Sims, and D. M. Corley. Mar 91, 40p NISTIR-4540

PB91-195222 Not available NTIS National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Center for Fire Research.

PB91-217422 PC A05/MF A01 TriData Corp., Arlington, VA.
EstImated Impact of the Center for Fire Research

Program on the Costs of Fire.
P. Schaenman. Jun 91, 83p NIST/GCR-91/591
Sponsored by National Inst. of Standards and Technology (BFRL), Gaithersburg, MD.

PC A05/MF A01 PB91-222604 National Inst. of Standards and Technology (BFRL), Gaithersburg, MD.
Reduction in Fire Hazard in Corridors and Areas

Adjoining Corridors Provided by Sprinklers. D. Madrzykowski. Jul 91, 90p NISTIR-4631 Sponsored by Public Buildings Service, Washington,

PC A03/MF A01 PB91-231589 National Inst. of Standards and Technology (BFRL), Gaithersburg, MD. General Routine for Analysis of Stack Effect.
J. H. Klote. Jul 91, 34p NISTIR-4588
Sponsored by General Services Administration, Wash-

ington, DC.

PC A03/MF A01 PB91-240770 National Inst. of Standards and Technology (BFRL), Gaithersburg, MD.
Suppression of Post-Flashover Compartment
Fires Using Manually Applied Water Sprays.
D. W. Stroup, and D. D. Evans. Jul 91, 41p NISTIR-

4625 Sponsored by Swedish Fire Research Board, Stockholm, and Public Buildings Service, Washington, DC.

PB91-240788 PC A03/MF A01 National Inst. of Standards and Technology (BFRL),

Gaithersburg, MD.
Framework for Utilizing Fire Property Tests.
T. G. Cleary, and J. G. Quintiere. Aug 91, 37p
NISTIR-4619

PC A16/MF A03 PB92-109164 National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Center for Fire Research.

#### General

Joint Panei Meeting of the UJNR Panei on Fire Research and Safety (11th). Held in Berkeley, CA. on October 19-24, 1989.

N. H. Jason, and D. M. Cramer. Oct 90, 365p NISTIR-4449

See also PB88-215926.

#### PB92-110287

(Order as PB92-110261, PC A05/MF A01) National Inst. of Standards and Technology, Gaithersburg, MD.

Data for Room Fire Model Comparisons.

R. D. Peacock, S. Davis, and V. Babrauskas. c1991, 52p

Included in Jnl. of Research of the National Institute of Standards and Technology, v96 n4 p411-462 Jul/Aug 91.

PB92-112218 PC A09/MF A03 National Inst. of Standards and Technology (BFRL), Gaithersburg, MD.

Summarles of BFRL Fire Research in-House Projects and Grants, 1991.

N. H. Jason. Oct 91, 199p NISTIR-4686

See also PB91-216788 and report for 1989, PB90-127101.

PB92-112317 PC A04/MF A01 National Inst. of Standards and Technology, Gaithers-

Engineering Analysis of the Fire Development in the Hilihaven Nursing Home Fire, October 5, 1989. H. E. Nelson, and K. M. Tu. Sep 91, 57p NISTIR-

Sponsored by Health Care Financing Administration, Baltimore, MD

PB92-112531 PC A05/MF A01 Pennsylvania State Univ., University Park. Dept. of Me-

chanical Engineering.

Turbulent Upward Flame Spread for Burning Verticai Walis Made of Finite Thickness.

Annual rept. 15 Aug 89-14 Aug 90.
A. K. Kulkarni, C. I. Kim, and C. H. Kuo. Sep 91, 88p NIST/GCR-91/597

Grant NANB-8D0849

See also PB91-143297. Sponsored by National Inst. of Standards and Technology (BFRL), Gaithersburg, MD.

# **BUSINESS & ECONOMICS**

### Consumer Affairs

PC A03/MF A01 National Inst. of Standards and Technology (TS), Gaithersburg, MD. Weights and Measures Program. Checking the Net Contents of Packaged Goods. Third Edition, Supplement 2.

Final rept. C. S. Brickenkamp, and J. A. Koenig. Oct 91, 17p NIST/HB-133-ED-3-SUPPL 2

Also available from Supt. of Docs. as SN003-003-03111-9. See also PB91-107144.

#### Domestic Commerce, Marketing, & **Economics**

PB91-194415 PC A03/MF A01 National Inst. of Standards and Technology, Gaithersburg, MD. Office of Standards Services. Laboratory Accreditation in the United States. Final rept.
M. A. Breitenberg. May 91, 31p NISTIR-4576 See also PB88-239793.

PB91-195693 Not available NTIS National Bureau of Standards, Gaithersburg, MD. Pro-

gram Office.
Structural Change and Competitiveness: The U.S. Semiconductor industry.

Final rept.

G. Tassey. 1990, 9p Pub. in Technological Forecasting and Social Change 37, n1 p85-93 Mar 90.

PB92-108968 PC A05/MF A01 National Inst. of Standards and Technology, Gaithersburg, MD. Office of Standards Code and Information. Directory of State and Local Government Laboratory Accreditation/Designation Programs.

tory Accreditation/Designation Programs.
Special pub. (Final).
C. W. Hyer. Jul 91, 90p NIST/SP-815
Contract 43NANB017411
Also available from Supt. of Docs. as SN003-003-03093-7. Supersedes PB85-121390. See also PB91-167379 and PB91-194415. Sponsored by National Inst. of Standards and Technology, Gaithersburg, MD. Office of Standards Code and Information.

PB92-126465 PC A03/MF A01 National Inst. of Standards and Technology, Gaithersburg, MD. Office of Standards Services. Questions and Answers on Quality, the ISO 9000 Standard Series, Quality System Registration, and Related issues. M. Breitenberg. Nov 91, 24p NISTIR-4721 See also PB91-194415.

#### International Commerce, Marketing, & **Economics**

PB91-159061 Not available NTIS National Bureau of Standards, Gaithersburg, MD. Office of Standards Code and Information. Domestic implementation. Final rept. 1983-85.

J. Overman. 1986, 18p Pub. in Report to the United States Congress on the Agreement on Technical Barriers to Trade - 'Standards Code', Chapter V, p25-42 Feb 86.

PB91-187823 PC A04/MF A01 National Inst. of Standards and Technology, Gaithersburg, MD. Office of Standards Code and Information. GATT Standards Code Activities of the National Institute of Standards and Technology 1990. Annual rept.

J. R. Overman. Apr 91, 53p NISTIR-4559 See also PB90-219817.

### General

PB91-194498 PC A11/MF A02 National Inst. of Standards and Technology, Gaithersburg, MD. Office of Standards Services.

Meeting of the Standards Working Group of the Joint U.S.-U.S.S.R. Commercial Commission (1st). Heid in Moscow on March 11-13, 1991. B. G. Simson. May 91, 235p NISTIR-4572

### CHEMISTRY

### **Analytical Chemistry**

AD-A227 869/5 PC A02/MF A01 National Inst. of Standards and Technology, Gaithersbura, MD. Scattered Light and Other Corrections in Absorp-

tion Coefficient Measurements in the Vacuum Ui-

1988.

tion Coefficient Measurements in the vacuum ortraviolet: A Systems Approach.
R. Klein, W. Braun, A. Fahr, A. Mele, and H. Okabe.
Jun 90, 9p ARO-25911.2-CH,
Contract MIPR-119-89
Pub. in Jnl. of Research of the National Institute of Standards and Technology, v95 n3 p337-344 May-Jun

AD-A243 170/8 PC A04/MF A01 National Bureau of Standards (NML), Gaithersburg, MD. Center for Chemical Physics. CID Spectra of Selected Target Molecules. Final rep. Jul 84-Sep 87. R. I. Martinez. Dec 89, 58p AFESC/ESL-TR-88-71, Contracts MIPR-N84-56, MIPR-N84-56-A01 Supported in part by MIPR-N85-22, MIPR-N86-12, MIPR-N87-12.

PB91-147694 Not available NTIS National Bureau of Standards (NML), Gaithersburg, MD. Chemical Kinetics Div.
Instrument-Independent Tandem Mass Spectrometry Database for XQQ Instruments: The Dynamicai Prerequisites. Final rept. R. I. Martinez. 1988, 6p Pub. in Rapid Commun. Mass Spectrom. 2, n1 p8-13

Not available NTIS PB91-147769 National Inst. of Standards and Technology (NML), Gaithersburg, MD. Organic Analytical Research Div. Capillary Supercritical Fiuld Chromatography of Explosives: investigations on the interactions be-tween the Analytes, the Mobile Phase and the Stationary Phase.

A. Munder, S. Chesler, and S. Wise. 1990, 8p Pub. in Jnl. of Chromatography 521, p63-70 1990.

PB91-147777 Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Gas and Particulate Science Div. Use of Single Particle Standards for LAMMA Calibration. Final rept.

I. H. Musselman, D. S. Simons, J. A. Small, and R. W. Linton. 1986, 17p Pub. in Jnl. of Trace and Microprobe Techniques 4, n3

p197-213 1986.

PB91-148148 Not available NTiS National Bureau of Standards (NML), Gaithersburg, MD. Organic Analytical Research Div.

# Analytical Chemistry

Trace Determination of Cr(VI) by LC/AAS with on-Line Preconcentration.

Final rept.

A. Syty, R. G. Christensen, and T. C. Rains. 1986, 4p Pub. in Atomic Spectroscopy 7, n4 p89-92 1986.

PC A06/MF A01 PB91-148502 National Inst. of Standards and Technology (NML), Boulder, CO. Thermophysics Div. Strategy for Chemical Analysis of Alternative Refrigerants.

Technical note.

T. J. Bruno. Aug 90, 102p NIST/TN-1340 Also available from Supt. of Docs.

PB91-148817 Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Inorganic Analytical Research Div Characterization of the Mineral Fraction in Botanical Reference Materials and Its influence on Homogenelty and Analytical Results. Final rept.

R. M. Lindstrom, A. R. Byrne, D. A. Becker, B. Smodis, and K. M. Garnty. 1990, 3p Pub. in Fresenius Jnl. of Analytical Chemistry 338,

p569-571 1990.

PB91-148858 Not available NTIS Not available NTS
National Bureau of Standards (NML), Gaithersburg,
MD. Organic Analytical Research Div.
Reverse-Phase HPLC Separation and Electrochemical Detection of Retinol and Its Isomers.

Final rept.

W. A. MacCrehan, and E. Schonberger. 1987, 14p Pub. in Jnl. of Chromatography - Biomedical Applica-tions 417, n1 p65-78 1987.

PB91-148874 Not available NTIS National Bureau of Standards (NML), Gaithersburg, MD. Inorganic Analytical Research Div.

Research at NBS in Direct Potentiometric Meas-

urements in Blood.

Final rept.

G. Mannenko, P. C. Gunaratna, and W. F. Koch. 1987, 11p

Pub. in Proceedings of Meeting of the European Working Group on Ion-Selective Electrodes (8th), Graz, Austria, October 2-4, 1986, p269-279 1987.

PB91-148981 Not available NTIS National Bureau of Standards (IMSE), Gaithersburg, MD. Polymers Div.

Methods for the Analysis of Organometallic Com-

pounds in Wastes. Final rept.

G. J. Olson, F. E. Brinckman, and W. R. Blair. 1988,

16p

Sponsored by Office of Naval Research, Arlington, VA. Pub. in Waste Testing and Quality Assurance, ASTM STP 999, p130-145 1988.

Not available NTIS PB91-149187 National Inst. of Standards and Technology (NML), Rational first of Standards and Fectimology (Nucleon Gaithersburg, MD. Organic Analytical Research Div. Determination of Bonded Phase Thickness in Liquid Chromatography by Small Angle Neutron Scattering.

Final rept. L. C. Sander, C. J. Glinka, and S. A. Wise. 1990, 3p Pub. in Analytical Chemistry 62, n10 p1099-1101 1990. NIST Standards for Sodium and Potassium. Final rept.

W. F. Koch. 1990, 9p

Pub. in Proceedings of International Symposium on Metrology and Clinical Applications of Electrochemical and Fiber Optic Sensors, Rochester, MN., September 22-25, 1989, p3-11 1990.

PB91-162198 Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Inorganic Analytical Research Div. Low-Background Gamma-Ray Assay Laboratory for Activation Analysis. Final rept.

R. M. Lindstrom, D. J. Lindstrom, L. A. Slaback, and

J. K. Langland. 1990, 5p Pub. in Nuclear Instruments and Methods in Physics Research A299, p425-429 1990.

PB91-162297 Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Electron and Optical Physics Div. Resonance Ionization Spectroscopy/Resonance Ionization Mass Spectrometry Data Service. II.
Data Sheets for AI, Ca, Cs, Cr, Co, Cu, Kr, Mg, Hg, and NL

Final rept.

E. B. Saloman, 1991, 60p

Pub. in Spectrochimica Acta 46B, n3 p319-378 1991.

PB91-174235 Not available NTIS National Inst. of Standards and Technology, Gaithersburg, MD. Standard Reference Materials Program. Appendix: Standard Solutions and Certified Reference Materiais.

Final rept.

R. Alvarez. 1990, 9p

Pub. in Official Methods of Analysis, v2 p1214-1222 1990

PB91-187641

(Order as PB91-187617, PC A06/MF A01) National Inst. of Standards and Technology, Gaithersburg, MD.

Multiple Variable-Angle Light Scattering Detector

for Gei Permeation Chromatography.

P. H. Verdier. 1991, 13p

Included in Jnl. of Research of the National Institute of Standards and Technology, v96 n2 p177-189 Mar/Apr

PB91-189282 Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Inorganic Analytical Research Div. Second Dissociation Constant and pH of N-2-hydroxyethylplperazine-N'-2-ethanesulfonic Acid (HEPES) from 0 to 50C. Final rept.

D. Feng, Y. C. Wu, and W. F. Koch. 1989, 6p

Pub. in Analytical Chemistry 61, n13 p1400-1405 1989.

PB91-189860 Not available NTIS National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Electricity Div. Detection of Trace Disulfur Decafluoride in Sulfur

Hexafluoride by Gas Chromatography/Mass Spectrometry.

Final rept. J. K. Olthoff, R. J. Van Brunt, J. T. Heron, and I. Sauers. 1991, 7p

Sponsored by Department of Energy, Washington, DC. Office of Electrical Systems.
Pub. in Analytical Chemistry 63, n7 p726-732, 1 Apr 91.

Not available NTIS PB91-189878 National Bureau of Standards (NML), Gaithersburg, MD. Inorganic Analytical Research Div.

Introduction to Supercritical Fiuld Chromatography. 1. Principles and Instrumentation. Final rept.

M. D. Palmieri. 1988, 1p See also Part 2, PB89-230312.

Pub. in Jnl. of Chemical Education 65, n10 pA254 1988

Not available NTIS PB91-190041 National Bureau of Standards (NML), Gaithersburg, MD. Organic Analytical Research Div.

Evaluation of Column Performance in Liquid Chromatography.

Final rept.

L. C. Sander. 1988, 8p

Pub. in Jnl. of Chromatographic Science 26, n8 p380-387 1988.

PB91-195156 Not available NTIS National Bureau of Standards (NML), Gaithersburg, MD. Inorganic Analytical Research Div. High Purity Chemicals and Clean Rooms for Trace

Metai Analysis. Final rept.

J. R. Moody. 1988, 4p

Pub. in Proceedings of International Symposium on Trace Analysis in Environmental Samples and Standard Reference Materials, Honolulu, Hl., January 6-8, 1988, p97-100.

PB91-195164 Not available NTIS National Bureau of Standards (NML), Gaithersburg, MD. Inorganic Analytical Research Div.

Recommended Inorganic Chemicals for Calibra-

Final rept.

J. R. Moody, K. W. Pratt, T. C. Rains, and R. R. Greenberg. 1988, 1p Pub. in Analytical Chemistry 60, n21 p1203 1988.

Not available NTIS PB91-195180 National Inst. of Standards and Technology (NML), Gaithersburg, MD. Gas and Particulate Science Div. Strategles for Background Subtraction in Electron Probe Microanalysis X-ray Compositional Mapping. Final rept.

R. L. Myklebust, D. E. Newbury, and R. B. Marinenko. 1989, 7p Pub. in Analytical Chemistry 61, n15 p1612-1618 1989.

PB91-195479 Not available NTIS National Inst. of Standards and Technology (CSTL), Gaithersburg, MD. Surface and Microanalysis Science Div.

Inner-Shell Ionization Cross Sections.

Final rept.

C. J. Powell. 1990, 8p

Pub. in Microbeam Analysis - 1990, p13-20.

PB91-195727 Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Gas and Particulate Science Div.

Accuracy of Transmission Electron Microscopy Analysis of Asbestos on Filters: Interlaboratory Study. Final rept.

S. Turner, and E. Steel. 1991, 5p See also PB87-162111.

Pub. in Analytical Chemistry 63, n9 p868-872, 1 May

PB91-203893 Not available NTIS National Inst. of Standards and Technology, Gaithersburg, MD. Office of Measurement Services.

Not available NTIS PB91-158865 National Inst. of Standards and Technology (NML), Gaithersburg, MD. Inorganic Analytical Research Div.

11

#### **CHEMISTRY**

### **Analytical Chemistry**

Reference Materials for Analytical Chemistry. Final rept. S. D. Rasberry. 1991, 3p

Pub. in Analusis 19, n1 p35-37 Jan 91.

PB91-203901 Not available NTIS National Inst. of Standards and Technology, Gaithersburg, MD. Office of Measurement Services. Role of Reference Materials In Quality Assurance.

Final rept. S. D. Rasberry, 1990, 2p

Pub. in Analytical Proceedings 27, n11 p296-297 Nov 90.

PB91-203968 Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Radiation Physics Div.

Resonance Ionization Spectroscopy/Resonance
Ionization Mass Spectrometry Data Service.

Final rept. E. B. Saloman. 1989, 4p See also PB91-162297.

Pub. in Proceedings of the International Symposium on Resonance Ionization Spectroscopy and Its Applications (4th), Gaithersburg, MD., April 10-15, 1989, p255-258.

PB91-236596 Not available NTIS National Inst. of Standards and Technology (CSTL), Gaithersburg, MD. Surface and Microanalysis Science

Quantitative Analysis of impurities in SIMOX Samples Using Secondary ion Mass Spectrometry. Final rept.

P. H. Chi, D. S. Simons, and P. Roitman. 1991, 5p Pub. in Surface and Interface Analysis 17, p57-61 1991

PB91-237727 Not available NTIS National Inst. of Standards and Technology (CSTL), Gaithersburg, MD. Inorganic Analytical Research Div. Characteristics of Aerosois Produced by the Spark

Final rept. R. L. Watters, J. A. Small, F. H. Shen, J. R. DeVoe, and R. B. Marinenko. 1989, 8p

Pub. in Analytical Chemistry 61, n17 p1826-1833 1989.

Not available NTIS PB92-116755 National Bureau of Standards (NML), Gaithersburg, MD. Inorganic Analytical Research Div.

Laser Enhanced Ionization as a Selective Detector for Liquid Chromatographic Determination of Alkyltins in Sediment.

Final rept.

K. S. Epler, T. C. O'Haver, W. A. MacCrehan, and G.

C. Turk. 1988, 5p Sponsored by Maryland Univ., College Park. Dept. of Chemistry and Biochemistry.

Pub. in Analytical Chemistry 60, n19 p2062-2066 1988.

PC A03/MF A01 PB92-126499 National Inst. of Standards and Technology (MSEL), Gaithersburg, MD. Polymers Div.

Stability of Aqueous Inorganic Lead Solutions in Polycarbonate Containers.

Annual rept. (Oct. 1991).

K. L. Jewett, W. R. Blair, F. E. Brinckman, and F. W. Wang. Dec 91, 27p NISTIR-4725

See also PB86-189875. Sponsored by Maryland Univ.

at Baltimore.

PC A06/MF A02 PB92-126614 National Inst. of Standards and Technology, Gaithersburg, MD.

Journal of Research of the National Institute of Standards and Technology, September-October 1991. Volume 96, Number 5. 1991, 65p

Also available from Supt. of Docs. as SN703-027-00042-3. See also PB92-126622 through PB92-126721 and PB92-110261. Library of Congress catalog card no. 89-656121.

PB92-126713

(Order as PB92-126614, PC A06/MF A02) National Inst. of Standards and Technology, Gaithersburg, MD.

Silicon Reference Materials Certified for isotope Abundances.
S. Valkiers, P. De Bievre, G. Lenaers, and H. S.

Peiser, 1991, 3p

Prepared in cooperation with Commission of the European Communities, Geel (Belgium). Central Bureau for Nuclear Measurements, and Antwerp Univ., Wilrijk (Belgium). Dept. of Chemistry.

Included in Jnl. of Research of the National Institute of Standards and Technology, v96 n5 p617-619 Sep/Oct

PB92-127315 Not available NTIS Teknekron Sensor Development Corp., Menlo Park,

Opportunities for innovation: Chemical and Blologicai Sensors.

M. Madou, and J. P. Joseph. Oct 91, 145p NIST/ GCR-91/593-1

Grant NANB9D0980

See also PB91-107078. Sponsored by National Inst. of Standards and Technology, Gaithersburg, MD.
Paper copy only available from National Institute of
Standards and Technology, Gaithersburg, MD. Oxidation of Organic Compounds by Active Manganese Dioxide. Final rept.

A. J. Fatiadi. 1986, 142p

Pub. in Organic Syntheses by Oxidation with Metal Compounds, Chapter 3, p119-260 1986.

PB91-175125 Not available NTIS National Inst. of Standards and Technology (IMSE), Gaithersburg, MD. Polymers Div.

ion incorporation into Octacalcium Phosphate Hydrolyzates.

Final rept.

B. B. Tomazic, I. Mayer, and W. E. Brown. 1991, 13p
Sponsored by American Dental Association Health
Foundation, Chicago, IL.

Pub. in Jnl. of Crystal Growth 108, p670-682 1991.

PB91-184853 PC A07/MF A01 National Inst. of Standards and Technology, Gaithersburg, MD.

Journal of Research of the National Institute of Standards and Technology. January-February 1991. Volume 96, Number 1.

1991, 150p Also available from Supt. of Docs as SN703-027-000-38-5. See also PB91-184861 and PB91-167411.

PB91-184861

(Order as PB91-184853, PC A07/MF A01) National Inst. of Standards and Technology, Gaithers-

burg, MD.

New Chemical and Stereochemical Applications of Organoiron Complexes.

A. J. Fatiadi. 1991, 113p

Included in Jnl. of Research of the National Institute of Standards and Technology, v96 n1 p1-113 Jan-Feb

#### **Basic & Synthetic Chemistry**

AD-A243 094/0 PC A03/MF A01 National Inst. of Standards and Technology, Gaithers-

Determination of the Optical Constants of Thin Chemical-Vapor-Deposited Diamond Windows from 0.5 to 6.5 eV.

Technical rept. L. H. Robins, E. N. Farabaugh, and A. Feldman. 27 Sep 91, 19p

Contract N00014-90-F-0011

Not available NTIS PB91-147447 National Bureau of Standards (NML), Gaithersburg, MD. Ionizing Radiation Div.

Mechanism of OH Radical Reactions with Thymine and Uracll Derivatives.

Final rept.

S. V. Jovanovic, and M. G. Simic. 1986, 5p Pub. in Jnl. of the American Chemical Society 108, n19 p5968-5972 1986.

PB91-159012 Not available NTIS National Bureau of Standards (NML), Gaithersburg, MD. Chemical Kinetics Div.

Redox Reactions of Osmium Porphyrins. Final rept.

S. Mosseri, P. Neta, D. Y. Sabry, P. Hambright, and A. Harriman, 1988, 7p

Pub. in Jnl. of the Chemical Society - Dalton Transactions 11, p2705-2711 1988.

Not available NTIS PB91-174730 National Bureau of Standards (NML), Gaithersburg, MD. Organic Analytical Research Div.

PB91-237347 Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Ionizing Radiation Div. Antioxidation Mechanisms of Uric Acid.

Final rept. M. G. Simic, and S. V. Jovanovic. 1989, 5p Pub. in Jnl. of the American Chemical Society 111, n15 p5778-5782 1989.

PB91-237370 Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Organic Analytical Research Div. Synthesis of 3-Quinuclidinol-(18)O, Benzilic-d5 Acid, and 3-Quinuclidinyl-(18)O, Benzilate-d5. Final rept.

L. T. Sniegoski, E. White, and G. D. Byrd. 1989, 11p Pub. in Jnl. of Labelled Compounds and Radiopharmaceuticals 27, n9 p983-993 1989.

#### **Industrial Chemistry & Chemical Process Engineering**

Not available NTIS PB91-162008 National Inst. of Standards and Technology (NML), Boulder, CO. Chemical Engineering Science Div. Small Scale Demand Type Neon Liquefaction

Final rept. W. P. Dube, A. J. Slifka, R. M. Bitsy, L. L. Sparks, and K. B. Johnson. 1990, 5p

Pub. in Advances in Cryogenic Engineering, v35 p1797-1801 1990.

### **Industrial Chemistry & Chemical Process Engineering**

PB91-162164 Not available NTIS National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Building Environment Div. Visualization of Nucleate Flow Bolling for an R22/ R114 Mixture and its Components.

Final rept. M. A. Kedzierski, and D. A. Didion. 1990, 17p Sponsored by Electric Power Research Inst., Palo Alto, CA

Pub. in Experimental Heat Transfer 3, p447-463 1990.

PB91-162222 Not available NTIS National Inst. of Standards and Technology (NML), Boulder, CO. Thermophysics Div.

New Wide Range Equation of State for Helium. Final rept.

R. D. McCarty, and V. D. Arp. 1990, 11p Pub. in Advances in Cryogenic Engineering 35, p1465-1475 1990.

PB91-174672 Not available NTIS National Inst. of Standards and Technology (NML), Boulder, CO. Chemical Engineering Science Div. Thermal Conductivity of Evacuated Perlite at Low Temperatures as a Function of Load and Load History. Final rept.

W. P. Dube, L. L. Sparks, and A. J. Slifka. 1991, 4p. Sponsored by National Aeronautics and Space Administration, Bay Saint Louis, MS. John C. Stennis Space Center

Pub. in Cryogenics 31, n3-6 Jan 91.

Not available NTIS PB91-175463 National Inst. of Standards and Technology (NML), Boulder, CO. Chemical Engineering Science Div. Overview of Facilitated Transport Membrane Sys-Final rept.

R. D. Noble, C. A. Koval, and J. J. Pellegrino. 1989, 13p

Pub. in Chemical Engineering Progress, p58-70 Mar

Not available NTIS National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Center for Chemical Engineering.

Application of Laser Diagnostic Techniques for the Examination of Liquid Fuel Spray Structure.

Final rept.
C. Presser, A. K. Gupta, H. G. Semerjian, and R. J. Santoro. 1990, 28p
Pub. in Chemical Engineering Communications 90,

p75-102 1990.

Not available NTIS National Inst. of Standards and Technology (NML), Boulder, CO. Chemical Engineering Science Div. Application of Osmotic Dewatering to the Controlled Crystallization of Biological Macromolecules and Organic Compounds.

Final rept. P. Todd, S. K. Sikdar, C. Walker, and Z. R. Korszun.

Pub. in Jnl. of Crystal Growth 110, p283-292 1991.

Not available NTIS National Inst. of Standards and Technology (CSTL), Boulder, CO. Chemical Engineering Div.

Electrokinetic Demixing of Two-Phase Aqueous Polymer Systems. 2. Separation Rates of Polyethylene Glycol-Maitodextrin Mixtures. Final rept.

K. S. M. S. Raghava Rao, R. M. Stewart, and P. W. Todd. 1991, 11p See also Part 1, PB91-159095.

Pub. in Separation Science and Technology 26, n2 p257-267 1991.

PB91-237297 Not available NTIS Gaithersburg, MD. Thermophysics Div.

Critical Point. Final rept.

National Inst. of Standards and Technology (CSTL), Thermodynamics of Solutions Near the Solvent's

Pub. in Supercritical Fluid Technology: Reviews in Modern Theory and Applications, Chapter 1, p1-56

PB91-237578 Not available NTIS National Inst. of Standards and Technology (CSTL), Gaithersburg, MD. Thermophysics Div.

Final rept.

S. Tang, G. X. Jin, and J. V. Sengers. 1991, 26p Contract DE-FG05-88ER13902

Sponsored by Department of Energy, Washington, DC. Pub. in International Jnl. of Thermophysics 12, n3 p515-540 May 91.

Thermodynamic Properties of 1,1,1,2,-Tetrafluor-oethane (R134a) in the Critical Region.

### **Photo & Radiation Chemistry**

AD-A227 868/7 PC A02/MF A01 National Inst. of Standards and Technology, Gaithersburg, MD.

Laser Photolysis of Trimethylgaillum at 193 nm: Quantum Yields for Methyl Radical and Ethane Production.

W. Braun, R. Klein, A. Fahr, H. Okabe, and A. Mele. 2 Mar 90, 8p ARO-25911.1-CH, Contract MIPR-119-89

Pub. in Chemical Physics Letters, v166 n4 p397-403, 2

PB91-147066 Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Surface Science Div. Laser Induced Desorption of Molecules from Sur-

Final rept.

R. R. Cavanagh, S. A. Buntin, L. J. Richter, and D. S. King. 1990, 12p Sponsored by Department of Energy, Washington, DC.

Pub. in Comments on Atomic and Molecular Physics 24, n6 p365-376 1990.

PB91-147793 Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Chemical Kinetics Div. Radiation Chemistry of Enones.

Final rept.

P. Neta, and M. Dizdaroglu. 1989, 24p

Sponsored by Department of Energy, Washington, DC. Pub. in Chemistry of Enones, Chapter 16, p757-780

PB91-148809 Not available NTIS National Inst. of Standards and Technology (NML), Boulder, CO. Quantum Physics Div.

Novel Laser Gain and Time-Resolved FTIR Studies of Photochemistry.

Final rept.

S. R. Leone. 1989, 13p

Contract DAAG-29-85-K-0033, Grant NSF-CHE84-

Sponsored by Department of Energy, Washington, DC., and National Science Foundation, Washington, DC.

Pub. in Proceedings of International Conference on Laboratory Research for Planetary Atmospheres (1st), Bowie, MD., October 25-27, 1989, p129-141.

PB91-149252 Not available NTIS National Inst. of Standards and Technology (NML), Boulder, CO. Quantum Physics Div.

Periodic Orbits and Diffuse Structures in the Photodissociation of Symmetric Triatomic Molecules. Final rept.

R. Schinke, and V. Engel. 1990, 5p

Pub. in Jnl. of Chemical Physics 93, n5 p3252-3256, 1

PB91-149260 Not available NTIS National Inst. of Standards and Technology (NML), Boulder, CO. Quantum Physics Div.

Photodissociation of C(I)NO in the S(I)State: A Quantum-Mechanical ab initio Study.

Final rept.

R. Schinke, M. Nonella, H. U. Suter, and J. R. Huber. 1990, 9p

Pub. in Jnl. of Chemical Physics 93, n2 p1098-1106, 15

PB91-203679 Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Chemical Kinetics Div. Mechanism of Cyanide Release in the Radiolysis

of Acetonitrile. Final rept.

S. Mosseri, P. Neta, and D. Meisel. 1990, 5p. Pub. in Radiation Physics and Chemistry 36, n6 p683-

PB91-236489 Not available NTIS National Inst. of Standards and Technology (PL), Gaithersburg, MD. Ionizing Radiation Div.

Mechanisms of the Reduction Reactions of Cr(Vi) In the Radiolysis of Acidic Potassium and Silver Dichromate Solutions in the Presence or Absence of Acetic Acid.

Final rept.

M. Al-Sheikhly, and W. L. McLaughlin. 1991, 9p. Pub. in Radiation Physics and Chemistry 38, n2 p203-211 1991

### Physical & Theoretical Chemistry

AD-A227 296/1 PC A04/MF A01 National Inst. of Standards and Technology, Boulder,

Detection of Excited States by Laser-induced Fluorescence and Analysis of Energy Transfer. Final rept. Oct 88-Sep 89.

J. Borysow, and A. V. Phelps. Sep 90, 70p WRDC-TR-90-2081

Contract MIPR-FY-88-N0655

AD-A228 082/4 PC A02/MF A01 National Inst. of Standards and Technology, Gaithersburg, MD.

Vibrational Spectra of Molecular lons Isolated In Solld Neon. III. N4(+).

W. E. Thompson, and M. E. Jacox. 15 Sep 90, 8p

ARO-25664.4-CH Contract MIPR-120-90

Pub. in Jnl. of Chemical Physics, v93 n6 p3856-3862, 15 Sep 90

AD-A230 957/3 PC A03/MF A01 National Inst. of Standards and Technology (NML), Gaithersburg, MD. Molecular Physics Div.

#### CHEMISTRY

### Physical & Theoretical Chemistry

Vibrational Spectra of Molecular Ions Isolated in Solid Neon. IV.NO(+), NO(-), ONNO(+), and ONNO(-).

M. E. Jacox. 1 Dec 90, 14p ARO-25664.7-CH,

Contract ARO-MIPR-120-90

Pub. in Jnl. of Chemical Physics, v93 n11 p7609-7621, 1 Dec 90.

AD-A234 043/8 PC A03/MF A01 National Inst. of Standards and Technology (NML), Gaithersburg, MD. Molecular Spectroscopy Div. Production and Spectroscopy of Small Polyatomic Molecular Ions Isolated in Solid Neon.
M. E. Jacox, and W. E. Thompson. 1990, 11p ARO-

25664.2-CH Contract ARO-MIPR-120-90

Availability: Pub. in High Temperature Science, v28 p225-234 1990. Available only to DTIC users. No copies furnished by NTIS.

AD-A235 490/0 PC A03/MF A01 National Inst. of Standards and Technology (IMSE), Gaithersburg, MD. Metallurgy Div.

Thermodynamic and Kinetic Stability of Refracto-

ry Materials at Ultra-High Temperatures.

Annual rept. 1 Oct 89-30 Sep 90.

J. W. Hastie, P. K. Schenck, and D. W. Bonnell. Nov 90, 31p AFOSR-TR-91-0447,
Grant AFOSR-ISSA-90-0026

AD-A236 485/9 PC A03/MF A01 National Inst. of Standards and Technology, Gaithersburg, MD.

Spatially and Spectrally Resolved Cathodoluminescence of Hot-Filament Chemical-Vapor-Deposited Diamond Particles. Interim rept.

L. H. Robins, E. N. Farabaugh, and A. Feldman. 24

Apr 91, 43p Contract N00014-90-F-0011

AD-A237 128/4 PC A03/MF A01

National Inst. of Standards and Technology (IMSE),
Gaithersburg, MD. Ceramics Div.

Spatially and Spectrally Resolved Cathodoluminescence of Hot-Filament Chemical-Vapor-Deposited Diamond Particles.

Interim rept. L. H. Robins. 24 Apr 91, 40p Contract N00014-90-F-0011

AD-A238 415/4 Not available NTIS National Inst. of Standards and Technology, Gaithers-

burg, MD.
Vibrational Spectra of Molecular lons isolated in

Solid Neon. 6. CO4(-).
M. E. Jacox, and W. E. Thompson. 4 Apr 91, 8p

ARO-25664.9-CH Contract ARO-MIPR-120-90

Pub. in Jnl. of Physical Chemistry, v95 n7 p2781-2787, 4 Apr 91. Available only to DTIC users. No copies furnished by NTIS.

AD-A239 729/7 Not available NTIS AD-A239 72977

Notional Inst. of Standards and Technology (NML),
Gaithersburg, MD. Molecular Physics Div.

Vibrational Spectra of Molecular Ions Isolated In
Soild Neon. 7. CO(+), C2O2(+), and C2O2(-). W. E. Thompson, and M. E. Jacox. 15 Jul 91, 11p ARO-25664.10-CH,

Pub. in Jnl. of Chemical Physics, v95 n2 p735-745, 15 Jul 91. Available only to DTIC users. No copies fur-

nished by NTIS.

Not available NTIS PB90-244526 American Chemical Society, Washington, DC.

Journal of Physical and Chemical Reference Data, Volume 19, Number 1, 1990.

Quarterly rept.

c1990, 319p See also PB90-244534 through PB90-244591 and PB90-161241. Prepared in cooperation with American Inst. of Physics, New York. Sponsored by National Inst. of Standards and Technology, Gaithersburg, MD. Available from American Chemical Society, 1155 16th St., NW, Washington, DC 20036.

#### PB90-244534

(Order as PB90-244526) National Inst. of Standards and Technology (NML), Gaithersburg, MD. Chemical Kinetics Div.

Chemical Kinetic Data Base for Combustion Chem-Istry Part 4. Isobutane.

Quarterly rept. W. Tsang. c1990, 68p

Contract DNA-001-85-C-0022

Sponsored by Defense Nuclear Agency, Washington,

Included in Jnl. of Physical and Chemical Reference Data, v19 n1 p1-68 1990. Available from American Chemical Society, 1155 16th St., NW, Washington, DC

#### PB90-244542

(Order as PB90-244526)

California Univ., Los Angeles. Thermodynamic Functions and Properties of MgO at High Compression and High Temperature. Quarterly rept.

O. L. Anderson, and K. Zou. c1990, 15p Grants DOE-ER-13803, NSF-EAR86-17290

Sponsored by Department of Energy, Washington, DC., and National Science Foundation, Washington, DC.

Included in Jnl. of Physical and Chemical Reference Data, v19 n1 p69-84 1990. Available from American Chemical Society, 1155 16th St., NW, Washington, DC

#### PB90-244559

(Order as PB90-244526) Oregon State Univ., Corvallis. Dept. of Chemistry. Critical Compliation of Surface Structures Deter-

mined by Ion Scattering Methods. Quarterly rept.

P. R. Watson. c1990, 27p Grant NBS-60NANB7D0729

Sponsored by National Inst. of Standards and Tech-

nology, Gaithersburg, MD. Included in Jnl. of Physical and Chemical Reference Data, v19 n1 p85-112 1990. Available from American Chemical Society, 1155 16th St., NW, Washington, DC 20036.

#### PB90-244567

(Order as PB90-244526)

Thessaloniki Univ., Salonika (Greece). Benzene: A Further Liquid Thermal Conductivity Standard.

Quarterly rept. M. J. Assael, M. L. V. Ramires, C. A. Nieto de Castro, and W. A. Wakeham. c1990, 3p

Contract DNA-001-85-C-0022 Sponsored by Defense Nuclear Agency, Washington, DC., Lisbon Univ. (Portugal). Dept. de Quimica, and Imperial Coll. of Science and Technology, London (Eng-

Included in Jnl. of Physical and Chemical Reference Data, v19 n1 p113-116 1990. Available from American Chemical Society, 1155 16th St., NW, Washington, DC

#### PB90-244591

(Order as PB90-244526) R and D Associates, Marina del Rey, CA.

**Updated Excitation and Ionization Cross Sections** for Electron Impact on Atomic Oxygen.

Quarterly rept.

R. R. Laher, and F. R. Gilmore. c1990, 29p

Contract DNA-001-85-C-0022

Sponsored by Defense Nuclear Agency, Washington,

Included in Jnl. of Physical and Chemical Reference Data, v19 n1 p277-304 1990. Available from American Chemical Society, 1155 16th St., NW, Washington, DC 20036.

PB90-244609 Not available NTIS

American Chemical Society, Washington, DC. Journal of Physical and Chemical Reference Data, Volume 19, Number 2, 1990.

Quarterly rept.

D. R. Lide. c1990, 208p

See also PB90-244617 through PB90-244641 and PB90-244526. Prepared in cooperation with American Inst. of Physics, New York. Sponsored by National Inst. of Standards and Technology, Gaithersburg, MD. Available from American Chemical Society, 1155 16th St., NW, Washington, DC 20036.

#### PB90-244617

(Order as PB90-244609) Massachusetts Inst. of Tech., Cambridge. Dept. of Chemistry.

Standard Chemical Thermodynamic Properties of Isomer Groups of Monochloroalkanes.

Quarterly rept.

R. A. Alberty, and M. B. Chung. c1990, 28p

Sponsored by National Inst. of Standards and Technology, Gaithersburg, MD.

Included in Jnl. of Physical and Chemical Reference Data, v19 n2 p321-348 1990. Available from American Chemical Society, 1155 16th St., NW, Washington, DC

20036.

#### PB90-244625

(Order as PB90-244609) Massachusetts Inst. of Tech., Cambridge. Dept. of Chemistry.

Standard Chemical Thermodynamic Properties of Polycyclic Aromatic Hydrocarbons and Their Isomer Groups. III. Naphthocoronene Series, Ovalene Series, and First Members of Some Higher Series.

Quarterly rept.

R. A. Alberty, M. B. Chung, and A. K. Reif. c1990, 22p

Sponsored by National Inst. of Standards and Technology, Gaithersburg, MD.

Included in Jnl. of Physical and Chemical Reference Data, v19 n2 p 349-370 1990. Available from American Chemical Society, 1155 16th St., NW, Washington, DC 20036.

#### PB90-244633

(Order as PB90-244609) National Inst. of Standards and Technology, Gaithers-

burg, MD. Dielectric Constant of Water and Debye-Huleckel

Limiting Law Slopes.

Quarterly rept.

D. G. Archer, and P. Wang. c1990, 41p

Included in Jnl. of Physical and Chemical Reference Data, v19 n2 p371-412 1990. Available from American Chemical Society, 1155 16th St., NW, Washington, DC 20036.

#### PR90-244641

(Order as PB90-244609)

Notre Dame Univ., IN. Radiation Lab.

Rate Constants for Reactions of Peroxvi Radicals in Fluid Solutions.

Quarterly rept.

P. Neta, R. E. Hue, and A. B. Ross. c1990, 161p Sponsored by National Inst. of Standards and Technology (NML), Gaithersburg, MD. Chemical Kinetics Div.

Included in Jnl. of Physical and Chemical Reference Data, v19 n2 p413-515 1990. Available from American Chemical Society, 1155 16th St., NW, Washington, DC 20036.

PB90-244658 Not available NTIS American Chemical Society, Washington, DC. Journal of Physical and Chemical Reference Data.

Volume 19, Number 3, 1990. Quarterly rept.

D. R. Lide. c1990, 294p

See also PB90-244666 through PB90-244724 and PB90-244609. Prepared in cooperation with American Inst. of Physics, New York. Sponsored by National Inst. of Standards and Technology, Gaithersburg, MD. Available from American Chemical Society, 1155 16th St., NW, Washington, DC 20036.

PB90-244674

(Order as PB90-244658) National Inst. for Fusion Science, Nagoya (Japan). Cross Sections and Related Data for Electron Collisions with Hydrogen Molecules and Molecular lons.

Quarterly rept.

H. Tawara, Y. Itikawa, H. Nishimura, and M. Yoshino. c1990, 20p

Prepared in cooperation with Institute of Space and Astronautical Science, Sagamihara (Japan), Niigata Univ. (Japan). Dept. of Physics, and Shibaura Inst. of Tech., Tokyo (Japan).

Included in Jnl. of Physical and Chemical Reference Data, v19 n3 p617-635 1990. Available from American Chemical Society, 1155 16th St., NW, Washington, DC 20036.

PB90-244682

(Order as PB90-244658) Institute of Space and Astronautical Science, Sagamihara (Japan).

Cross Sections for Collisions of Electrons and Photons with Atomic Oxygen.

Quarterly rept.

Y. Itikawa, and A. Ichimura. c1990, 13p

Included in Jnl. of Physical and Chemical Reference Data, v19 n3 p637-650 1990. Available from American Chemical Society, 1155 16th St., NW, Washington, DC 20036

PB90-244716

(Order as PB90-244658) Vysoka Skola Chemicko-Technologicka, Prague (Czechoslovakia).

Heat Capacities of Organic Compounds in the Liquid State I. C1 to C18 1-Alkanols. Quarterly rept.

M. Zabránsky, V. Ruzicka, and V. Majer. c1990, 44p Grant NBS-60NANB9DO912

Prepared in cooperation with Delaware Univ., Newark. Dept. of Chemistry. Sponsored by National Inst. of Standards and Technology, Gaithersburg, MD.

Included in Jnl. of Physical and Chemical Reference Data, v19 n3 p719-760 1990. Available from American Chemical Society, 1155 16th St., NW, Washington, DC

#### PR90-244724

(Order as PB90-244658) Imperial Coll. of Science and Technology, London (England). Dept. of Chemical Engineering and Chemical Technology. Transport Properties of Carbon Dioxide.

Quarterly rept.
V. Vesovic, W. A. Wakeham, G. A. Olchowy, J. V. Sengers, J. T. R. Watson, and J. Millat. c1990, 46p Prepared in cooperation with Maryland Univ., College Park. Inst. for Physical Science and Technology, National Engineering Lab., East Kilbride (Scotland), and Rostock Univ. (German D.R.). Included in Jnl. of Physical and Chemical Reference

Data, v19 n3 p763-808 1990. Available from American Chemical Society, 1155 16th St., NW, Washington, DC

20036.

PB91-134494 Not available NTIS National Inst. of Standards and Technology (NML), Boulder, CO. Thermophysics Div.

Critical Locus, (Vapor + Liquid) Equilibria, and Co-existing Densities of (Carbon Dioxide + Propane) at Temperatures from 311 K to 361 K.

Final rept. V. G. Niesen, and J. C. Rainwater. 1990, 19p Sponsored by Department of Energy, Washington, DC. Office of Basic Energy Sciences.
Pub. in Jnl. of Chemical Thermodynamics 22, p777-

PB91-134676 Not available NTIS National Inst. of Standards and Technology (NML), Boulder, CO. Thermophysics Div. Neutron Diffraction from Sheared D-Glycerol: Pre-Ilminary Studies.

Final rept. G. C. Straty, and H. J. M. Hanley. 1988, 8p. Sponsored by Department of Energy, Washington, DC. Office of Basic Energy Sciences.

Pub. in Proceedings of Symposium on Energy Engineering Sciences (6th), May 4-6, 1988, p136-143.

Not available NTIS PB91-134957 National Inst. of Standards and Technology (NML), Boulder, CO. Thermophysics Div. Structure of a Stage-3 Cs - Graphite Intercalate.

P. A. Wielopolski, J. W. White, and H. J. M. Hanley. 1990, 11p Pub. in Molecular Physics 69, n6 p947-957 1990.

PB91-146985 Not available NTIS National Bureau of Standards (NML), Gaithersburg, MD. Surface Science Div.

Adsorption of Water and Oxygen on Ag(110): A

Study of the Interactions among Water Molecules, Hydroxyl Groups, and Oxygen Atoms. Final rent

K. Bange, T. E. Madey, J. K. Sass, and E. M. Stuve.

Pub. in Surface Science 183, n3 p334-362 1987.

Not available NTIS PB91-147009 National Inst. of Standards and Technology (NML), Gaithersburg, MD. Thermophysics Div. Critical Exponent for Viscosity. Final rept.

R. F. Berg, and M. R. Moldover. 1990, 4p Sponsored by National Aeronautics and Space Administration, Washington, DC.
Pub. in Physical Review A 42, n12 p7183-7186, 15 Dec

Not available NTIS PB91-147041 National Inst. of Standards and Technology (NML), Boulder, CO. Chemical Engineering Science Div. Heat Capacity and Thermodynamic Properties of Deuterated Ammonium Hexafluorophosphate ND4PF6 from 5.8 K to 347 K.

Final rept. J. E. Callanan, R. D. Weir, and E. F. Westrum. 1990, 12p

Sponsored by Department of National Defence, Ottawa (Ontano). Pub. in Jnl. of Chemical Thermodynamics 22, p979-

990 1990

PB91-147058 Not available NTIS National Inst. of Standards and Technology (NML), Boulder, CO. Chemical Engineering Science Div. Heat Capacity of Deuterated Ammonium Tetra-fluoroborate ND4BF4 from 7 to 348 K.

Final rept.

J. E. Callanan, R. D. Weir, and E. F. Westrum. 1990, 12p

Sponsored by Department of National Defence, Ottawa (Ontario).

Pub. in Jnl. of Chemical Thermodynamics 22, p957-968 1990.

PB91-147157 Not available NTIS National Bureau of Standards (NML), Gaithersburg,

MD. Organic Analytical Research Div.

Cryogenic-Temperature Fluorescence Spectra of Polynuclear Aromatic Hydrocarbons of Molecular Weight 302.

Final rept.

A. L. Colmsio, and S. A. Wise, 1986, 9p.

Pub. in Analytica Chimica Acta 187, p129-137 1986.

PB91-147199 Not available NTIS National Inst. of Standards and Technology (NML), Boulder, CO. Chemical Engineering Science Div. Hydrogen Slush Production with a Large Auger. Final rept.

D. E. Daney, V. D. Arp, and R. O. Voth. 1990, 10p Sponsored by National Aeronautics and Space Administration, Cleveland, OH. Lewis Research Center.
Pub. in Advances in Cryogenic Engineering 35, p1767-1776 1990.

PB91-147298 Not available NTIS National Bureau of Standards (NML), Gaithersburg, MD. Surface Science Div. Soluble Models in Surface Collision Dynamics.

Final rept. J. W. Gadzuk. 1988, 7p

Pub. in Solvay Conference on Surface Science, v14 p310-316 1988.

Not available NTIS PB91-147363 National Inst. of Standards and Technology (NML), Gaithersburg, MD. Thermophysics Div. Limiting versus Apparant Critical Behavior of Henry's Constants and K Factors. Final rept

A. H. Harvey, R. Crovetto, and J. M. H. Levelt Sengers. 1990, 4p

Pub. in AIChE Jnl. 36, n12 p1901-1904 Dec 90.

PB91-147405 Not available NTIS National Inst. of Standards and Technology (NML), Boulder, CO. Thermophysics Div.

Extension of an Improved One-Fluid Conformal Solution Theory to Real Fluid Mixtures with Large Size Differences.

Final rept. M. L. Huber, and J. F. Ely. 1990, 10p

Sponsored by Department of Energy, Washington, DC. Pub. in International Jnl. of Thermophysics 11, n1 p87-96 Jan 90.

Not available NTIS PB91-147454 National Bureau of Standards (NML), Gaithersburg, MD. Molecular Spectroscopy Div. Structure of Carbon Dioxide Dimer from Near Infrared Spectroscopy.

Final rept. K. W. Jucks, Z. S. Huang, D. Dayton, R. E. Miller,

and W. J. Lafferty. 1987, 6p Pub. in Jnl. Chemical Physics 86, n8 p4341-4346 1987.

Not available NTIS PB91-147470 National Inst. of Standards and Technology (NML), Gaithersburg, MD. Chemical Kinetics Div.

#### CHEMISTRY

### Physical & Theoretical Chemistry

Alkyl Transfer Reactions between Protonated Al-cohols and Ethers. The Gas-Phase Alkylation of Formaldehyde.

Final rept.

Z. Karpas, and M. Mautner. 1989, 5p Pub. in Jnl. of Physical Chemistry 93, n5 p1859-1863

PB91-147538 Not available NTIS National Bureau of Standards (NEL), Gaithersburg, MD. Chemical Process Metrology Div.
Instability In pH Measurements of Sputtered IrO2 Films.

Final rept.

K. G. Kreider, S. Semancik, and J. E. Erickson. 1987,

Pub. in Proceedings of International Conference on Sensors and Actuators (4th) - Transducers '87, Tokyo, Japan, June 2-5, 1987, p734-737.

PB91-147645 Not available NTIS National Bureau of Standards (NML), Gaithersburg,

MD. Chemical Kinetics Div.
Resonance Enhanced Multiphoton Ionization Spectroscopy of CHCl2 and CDCl2. Final rept.

G. R. Long, and J. W. Hudgens. 1987, 3p Pub. in Jnl. of Physical Chemistry 91, p5870-5872

1987.

PB91-147710 Not available NTIS National Bureau of Standards (NML), Gaithersburg, MD. Chemical Kinetics Div.

Multicomponent Cluster Ions. 2. Comparative Stabilities of Cationic and Anionic Hydrogen Bonded Networks: Mixed Clusters of Water and Hydrogen Cyanide.

Final rept.

M. Mautner, and C. V. Speller. 1989, 4p See also AD-A167 880.

Pub. in Jnl. of Physical Chemistry 93, n9 p3663-3666

PB91-147785 Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Chemical Kinetics Div. Slow Electron Transfer Reactions between Alkylhydrazines.

Final rept. S. F. Nelsen, D. T. Rumack, and M. Mautner. 1987.

Pub. in Jnl. of American Chemical Society 109, n5 p1373-1379 1987.

Not available NTIS PB91-147801 National Bureau of Standards (NML), Gaithersburg, MD. Chemical Kinetics Div.

Pulse Radiolysis Studies of Organic Electron Transfer Reactions.

Final rept.

P. Neta, and A. Harriman. 1988, 53p Pub. in Photoinduced Electron Transfer, Chapter 2.3, p110-1621988.

PB91-147884 Not available NTIS National Bureau of Standards (IMSE), Gaithersburg, MD. Ceramics Div.

Effects of Pressure on the Thermal Decomposition Kinetics and Chemical Reactivity of Nitromethane.

G. J. Piermarini, S. Block, and P. J. Miller. 1989, 6p Pub. in Jnl. of Physical Chemistry 93, n1 p457-462 1989.

Not available NTIS PB91-148015 National Inst. of Standards and Technology (NML), Gaithersburg, MD. Surface Science Div.

Resonant Photoemission and PSD of Rare Earth Oxides.

Final rept.

J. Schmidt-May, F. Senf, J. Voss, C. Kunz, and A. Flodstrom. 1985, 4p

Pub. in Desorption Induced by Electronic Transitions, DIET II, Springer Series in Surface Sciences, v4 p94-97 1985.

PB91-148080 Not available NTIS National Bureau of Standards (NML), Gaithersburg, MD. Molecular Spectroscopy Div.
Fluoromethanol: Synthesis, Microwave Spectrum,

and Dipole Moment. Final rept.

R. D. Suenram, F. J. Lovas, and H. M. Pickett. 1986.

Pub. in Jnl. of Molecular Spectroscopy 119, n2 p446-455 1986.

PB91-148171 Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Thermophysics Div. Ergodic Convergence Properties of Supercooled

Liquids and Glasses. Final rept.

D. Thirumalai, and R. D. Mountain. 1990, 14p See also PB90-254814. Sponsored by National Science Foundation, Washington, DC.

Pub. in Physical Review A 42, n8 p4574-4587, 15 Oct

PB91-148650 Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Molecular Physics Div.
Microwave Spectrum of Ar-H2O: Dipole Moment,

Isotopic Studies, and (17)O Quadrupole Coupling Constants. Final rept.

G. T. Fraser, F. J. Lovas, R. D. Suenram, and K. Matsumura. 1990, 16p Pub. in Jnl. of Molecular Spectroscopy 144, p97-112

PB91-148726 Not available NTIS National Inst. of Standards and Technology (NML), Boulder, CO. Quantum Physics Div. Photodissociation Dynamics of Water in the Second Absorption Band: Vibrational Excitation of OH (A (2)SIgma).

Final rept. B. Heumann, K. Kuhl, K. Weide, R. Duren, B. Hess, U. Meier, S. D. Peyerimhoff, and R. Schinke. 1990,

Pub. in Chemical Physics Letters 166, n4 p385-390, 2 Mar 90.

PB91-148783 Not available NTIS
National Inst. of Standards and Technology (NEL),
Boulder, CO. Chemical Engineering Science Div.
Kinetics of Copper Extraction Using (anti)-2-Hydroxy-5-Nonlybenzophenone Oxime. Final rept.

M. F. Jin, F. C. Michel, and R. D. Noble. 1989, 6p. Pub. in Industrial and Engineering Chemistry Research 28, n2 p193-198 Feb 89.

PB91-148841 Not available NTIS National Inst. of Standards and Technology (NML), Boulder, CO. Quantum Physics Div.

Mode Specific Internal and Direct Rotational Pre-dissociation in HeHF, HeDF, and HeHCL: van der Waals Complexes in the Weak Binding Limit. Final rept.

C. M. Lovejoy, and D. J. Nesbitt. 1990, 21p Grant NSF-CHE86-05970

Sponsored by National Science Foundation, Washing-

Pub. in Jnl. of Chemical Physics 93, n8 p5387-5407, 15 Oct 90.

PB91-148882 Not available NTIS National Inst. of Standards and Technology (NML),

Gaithersburg, MD. Molecular Physics Div. Structures of the NH3-HCCCCH and H2O-HCCCCH

Complexes by Fourier-Transform Microwave Spectroscopy. Final rept.

K. Matsumura, F. J. Lovas, and R. D. Suenram. 1990, 16p

Pub. in Jnl. of Molecular Spectrscopy 144, p123-138 1990.

Not available NTIS National Inst. of Standards and Technology (NML), Boulder, CO. Quantum Physics Div.

Multireference-Configuration Interaction (MR-CI) Calculations on HS(2+) and Experimental Observation via Electron impact ionization of H2S. Final rept.

P. J. Miller, S. A. Rogers, J. Senekowitsch, S. V. ONeil, and S. R. Leone. 1990, 15p

Contract AFOSR89-0073

Sponsored by Air Force Office of Scientific Research, Bolling AFB, Washington, DC.

Pub. in International Jnl. of Mass Spectrometry and Ion Processes 100, p505-519 1990.

PB91-148940 Not available NTIS National Bureau of Standards (NEL), Gaithersburg, MD. Fire Measurement and Research Div.

Applicability of Smoluchowski's Equation with a

Constant Kernel to Coalescence. Final rept.

G. W. Mulholland, and R. D. Mountain, 1986, 2p Pub. in Jnl. of Chemical Physics 84, n7 p4109-4110, 1 Apr 86.

PB91-148973 Not available NTIS National Inst. of Standards and Technology (NML), Boulder, CO. Quantum Physics Div.

H + O3 Fourier-Transform Infrared Emission and Laser Absorption Studies of OH (X(2) PI) Radical: An Experimental Dipole Moment Function and State-to-State Einstein A Coefficients. Final rept.

D. D. Nelson, A. Schiffman, D. J. Nesbitt, J. J. Orlando, and J. B. Burkholder. 1990, 17p Contract AFOSR-F49620-86-C-0056

Sponsored by Air Force Office of Scientific Research, Bolling AFB, DC.

Pub. in Jnl. of Chemical Physics 93, n10 p7003-7019, 15 Nov 90.

PB91-149005 Not available NTIS National Inst. of Standards and Technology (NML), Boulder, CO. Quantum Physics Div.

Laser-Induced Fluorescence Measurements of Drift-Velocity Distributions for Ba(+) in Ar: Moment Analysis and a Direct Measure of Skew-

Final rept.

S. M. Penn, J. P. M. Beijers, R. A. Dressler, V. M. Bierbaum, and S. R. Leone. 1990, 10p Contract AFOSR84-02

Sponsored by Air Force Office of Scientific Research, Bolling AFB, DC.

Pub. in Jnl. of Chemical Physics 93, n7 p5118-5127, 1 Oct 90.

PB91-149161 Not available NTIS National Inst. of Standards and Technology (NML), Boulder, CO. Chemical Engineering Science Div.

Applied Electric Fields for Downstream Process-Ing.

Final rept.

S. R. Rudge, and P. Todd. 1990, 27p

Pub. in Protein Purification from Molecular Mechanisms to Large-Scale Processes, ACS Symposium Series 427, Chapter 16, p244-270 1990.

PB91-149369 Not available NTIS National Bureau of Standards (NML), Gaithersburg, MD. Surface Science Div.

Influence of Sulfur on Methanation over Tungsten(110).

Final rept. P. D. Szuromi, R. D. Kelley, and T. E. Madey. 1986,

Pub. in Jnl. of Physical Chemistry 90, n24 p6499-6507 1986.

PB91-149377 Not available NTIS National Bureau of Standards (NML), Gaithersburg, MD. Surface Science Div.

Summary Abstract: The Influence of Sulfur on Methanation over W(110).
Final rept.

P. D. Szuromi, R. D. Kelley, and T. E. Madev. 1987.

Pub. in Jnl. of Vacuum Science and Technology A 5, n4 p867-868 1987.

PB91-149385 Not available NTIS National Inst. of Standards and Technology (NML), Boulder, CO. Quantum Physics Div.

General Method for Doppler Determination of Cy-lindrically Symmetric Velocity Distributions: An Application of Fourier Transform Doppler Spectroscopy.

Final rept. C. A. Taatjes, J. I. Cline, and S. R. Leone. 1990, 6p Grant NSF-PHY86-04504

Sponsored by National Science Foundation, Washington, DC., and Air Force Weapons Lab., Kirtland AFB,

Pub. in Jnl. of Chemical Physics 93, n9 p6554-6559, 1 Nov 90.

PB91-149393 Not available NTIS National Inst. of Standards and Technology (MSEL), Gaithersburg, MD. Ceramics Div.

Relation between the Surface Energy and the Debye Temperature for Cubic Soiids. Final rept.

V. K. Tewary, and E. R. Fuller. 1990, 5p Pub. in Jnl. of Materials Research 5, n5 p1118-1122 May 90.

Not available NTIS PB91-149831 National Bureau of Standards (NEL), Boulder, CO. Chemical Engineering Science Div.

Thermodynamics of Ammonium Indates, 2, The

Moiar Heat Capacity of the Ammonium Pentabro-moindate Monohydrate Salt (NH4)2 InBr5.H2O from 7.8 to 348 K. Final rept.

S. M. Acosta, E. F. Westrum, R. J. C. Brown, J. E. Callanan, and R. D. Weir. 1988, 6p See also PB89-123905.

Pub. in Jnl. of Chemical Thermodynamics 20, p1321-1326 1988.

PB91-149864 Not available NTIS National Inst. of Standards and Technology (NML), Boulder, CO. Chemical Engineering Science Div. Thermodynamics of the Divaient Metal Fluorides. 3. Heat Capacity of the Fast ion Conductor Sr SnF4 from 6 to 344 K.

Final rept. J. E. Callanan, R. Shaviv, E. F. Westrum, and R. D. Weir. 1989, 7p

See also PB91-133850. Pub. in Jni. of Solid State Chemistry 81, p51-57 1989.

PB91-149906 Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Molecular Physics Div. Vibrational Spectra of Molecular ions isolated in Soild Neon. 5. N2O(1+) and NNO2(1-). Final rept.

M. E. Jacox. 1990, 10p

See also PB91-149914 and PB91-112714. Sponsored by Army Research Office, Research Triangle Park, NC. Pub. in Jnl. of Chemical Physics 93, n11 p7622-7631, 1

PB91-149914 Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Molecular Physics Div.
Vibrational Spectra of Molecular Ions isolated in
Solid Neon. 4. NO(1+), NO(1-), ONNO(1+), and

ONNO(1-).

Final rept. M. E. Jacox, and W. E. Thompson. 1990, 13p See also PB91-149906 and PB91-112714. Sponsored by Army Research Office, Research Triangle Park, NC. Pub. in Jnl. of Chemical Physics 93, n11 p7609-7621, 1

PB91-149955 Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Molecular Physics Div.

Application of Ultrafast Broadband infrared Spectroscopy to Measurement of Metai-Carbonyi Dynamics. Final rept.

S. A. Angel, P. A. Hansen, E. J. Heilweil, and J. C. Stephenson. 1990, 3p

Pub. in Springer Series in Chemical Physics, v53 p480-

PB91-150003 Not available NTIS National Inst. of Standards and Technology (NEL), Boulder, CO. Chemical Engineering Science Div. Fusion of Mercury. A New Certified Standard for Differential Scanning Caiorimetry.

J. E. Callanan, K. M. McDermott, and E. F. Westrum. 1990, 6p

Pub. in Jnl. of Chemical Thermodynamics 22, p225-230 1990.

PB91-150052 Not available NTIS National Inst. of Standards and Technology (NML), Boulder, CO. Quantum Physics Div.

Diode Laser Probing of i\*((2)P1/2) Doppier Pro-

flles: Time Evolution of a Fast, Anisotropic Velocity Distribution in a Thermai Bath. Final rept.

J. i. Cline, C. A. Taatjes, and S. R. Leone. 1990, 11p Sponsored by Weapons Lab., Kirtland AFB, NM. Pub. in Jnl. of Chemical Physics 93, n9 p6543-6553, 1 Nov 90.

PB91-158717 Not available NTIS National Inst. of Standards and Technology (IMSE), Gaithersburg, MD. Reactor Radiation Div.

New Different Forms of Ammonium Loaded and

Partiy Deammoniated Zeolite Rho Studied by Neutron Powder. Final rept.

R. Fischer, W. Baur, R. Shannon, J. Parise, and J. Faber, 1989, 7p Pub. in Acta Cryst. C45, p983-989 1989.

PB91-158790 Not available NTIS National Inst. of Standards and Technology (NML), Caithersburg, MD. Chemical Kinetics Div.

Zonai Modei for Corona Discharge-induced Oxidation of SF6 in SF6/O2/H2O Gas Mixtures.

Final rept. J. T. Herron, and R. J. Van Brunt. 1989, 6p 5. 1. Herrori, and H. J. Van Bruht. 1989, 6p Sponsored by Department of Energy, Washington, DC. Pub. in Proceedings of International Symposium on Plasma Chemistry (9th), Pugnochiuso, Italy, September 4-8, 1989, v1 p257-262.

Not available NTIS National Bureau of Standards (NEL), Gaithersburg, MD. Thermophysics Div. Wetting Layers on Solid Substrates. Final rept.

R. F. Kayser, 1987, 19p Pub. in KINAM, v8 ptA p87-105 1987.

PB91-161927 Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Surface Science Div. Picosecond iR Studies of the Vibrational Dynamics of CO/Pt(111).

Final rept.

J. D. Beckerle, M. P. Casassa, E. J. Heilweil, R. R. Cavanagh, and J. C. Stephenson. 1990, 10p Sponsored by Air Force Office of Scientific Research, Bolling AFB, DC.

Pub. in Jnl. of Electron Spectroscopy and Related Phenomena 54/55, p17-26 1990.

PB91-161968 Not available NTIS National Bureau of Standards (NEL), Gaithersburg, MD. Thermodynamics Div.

Research at NBS on Dynamic Measurements of Thermophysical Properties at High Temperature (Abstract).

Final rept.

A. Cezairiiyan, 1988, 1p.

Pub. in Thermal Conductivity, p3 1988.

PB91-162057 Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Molecular Physics Div. H2O2: Spectroscopy, Structure and Dynamics. Final rept.

G. T. Fraser, 1991, 18p

Pub. in International Review in Physical Chemistry 10, n2 p189-206 1991.

PB91-162065 Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Surface Science Div.

Resonant Tunneling with Electron-Phonon inter-actions: An Exactly Solvable Model Applied to Desorption.

Final rept.

J. W. Gadzuk. 1990, 10p

Pub. in Jnl. of Electron Spectroscopy and Related Phenomena 54/55, p201-210 1990.

PB91-162073 Not available NTIS National Inst. of Standards and Technology (NML), Boulder, CO. Thermophysics Div. Phase Transitions. Final rept.

M. S. Green, and J. M. H. Levelt Sengers. 1990, 5p Pub. in Encyclopedia of Physics, p897-901 1990.

PB91-162081 Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Thermophysics Div. Unified Description of Infinite-Dilution Thermodynamic Properties for Aqueous Solutes. Final rept.

A. H. Harvey, J. M. H. Levelt Sengers, and J. C. Tanger. 1991, 6p Pub. in Jnl. of Physical Chemistry 95, n2 p932-937

Not available NTIS PB91-162289 National Inst. of Standards and Technology (NML), Gaithersburg, MD. Surface Science Div.

#### **CHEMISTRY**

### Physical & Theoretical Chemistry

Surface-State-Mediated Photochemistry: Laser-induced Desorption of NO from SI (111). Final rept.

L. J. Richter, S. A. Buntin, D. S. King, and R. R. Cavanagh. 1990, 4p

Contract DE-Al05-84ER13150

Sponsored by Department of Energy, Washington, DC. Pub. in Physical Review Letters 65, n15 p1957-1960, 8 Oct 90.

PB91-167213 PC A05/MF A01 National Inst. of Standards and Technology, Gaithersburg, MD.

Technical Activities 1990, Standard Reference Data Program.

M. W. Chase. Jan 91, 83p NISTIR-4505

See also PB90-185109.

PB91-174763 Not available NTIS National Inst. of Standards and Technology (NEL), Boulder, CO. Thermophysics Div.
Viscosity Surface for Mixtures of Methane and

Ethane.

Final rept.

D. G. Friend. 1990, 8p

Pub. in Cryogenics 30, p105-112 Feb 90.

PB91-174805 Not available NTIS National Inst. of Standards and Technology (NML), Boulder, CO. Chemical Engineering Science Div. increased Facilitated Transport Related to Microstructural Changes in Heat-Treated Ion-Exchange Membranes.

Final rept. M. D. Heaney, and J. J. Pellegrino. 1989, 19p Sponsored by Department of Energy, Morgantown, WV. Morgantown Energy Technology Center.
Pub. in Jnl. of Membrane Science 47, p143-161 1989.

Not available NTIS National Bureau of Standards (NML), Gaithersburg, MD. Molecular Spectroscopy Div. Population Lifetimes of OH (v=1) and OD (v=1) Vibrations in Alcohols, Silanois and Crystalline Micas.

Final rept. E. J. Heilweil, M. P. Cassassa, R. R. Cavanagh, and J. C. Stephenson. 1986, 4p Sponsored by Air Force Office of Scientific Research, Bolling AFB, DC.

Pub. in Springer Series in Chemical Physics 'Ultrafast Phenomena V', v46 p465-468 1986.

PB91-174821 Not available NTIS National Bureau of Standards (NML), Gaithersburg, MD. Chemical Kinetics Div.

Thermochemistry of Suifoxides and Suifones.

Final rept.

J. T. Herron. 1988, 12p

Pub. in Chem. Sulphones Sulphoxides, p95-106 1988.

Not available NTIS PB91-174839 National Bureau of Standards (NML), Gaithersburg, MD. Chemical Kinetics Div. Formation and Stability of SF5 and S2F10.

Final rept.

J. T. Herron, and W. Tsang. 1987, 6p Pub. in Proceedings of International Symposium on Gaseous Dielectrics (5th), p199-204 1987.

PB91-174847 Not available NTIS National Bureau of Standards (NML), Gaithersburg, MD. Chemical Kinetics Div. Letter to Editor of Chemical and Engineering

News. Final rept.

J. T. Herron, and W. Tsang. 1987, 1p Pub. in Chemical and Engineering News 65, n44 p3

PB91-174870 Not available NTIS National Bureau of Standards (NML), Gaithersburg,

MD. Chemical Kinetics Div.

Resonance Enhanced Multiphoton ionization
Spectroscopy of CHCi2 and CDCi2.

J. W. Hudgens, and G. R. Long. 1988, 3p Pub. in AIP Conference Proceedings, n172 p337-339

PB91-174995 Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Quantum Metrology Div. Polarized X-ray Emission Studies of Methyl Chioride and the Chlorofluoromethanes. Final rept.

Final rept.

D. W. Lindle, P. L. Cowan, T. Jach, R. E. LaVilla, R. D. Deslattes, and R. C. C. Perera. 1991, 14p

Sponsored by Department of Energy, Washington, DC. Pub. in Physical Review A 43, n5 p2353-2366, 1 Mar

PB91-175059 Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Chemical Kinetics Div. Group Reactivities In the Gas Phase Reactions of Hydroxyl Radicals with Ethers. Final rept. R. Liu, T. J. Wallington, P. Dagaut, and M. J. Kuryio.

1989, 4p Pub. in Wuli Huaxue Xuebao 5, n2 p210-213 1989.

PB91-175133 Not available NTIS National Bureau of Standards (NML), Gaithersburg, MD. Chemical Kinetics Div.

Single Pulse Shock Tube Study of the Reactions of Hydrogen Atoms with Aromatics. 4. Chlorotoluenes. Final rept.

W. Tsang, Y. Z. He, W. G. Mallard, and J. P. Cui. Pub. in Shock Tubes and Waves, p467-474 1988.

National Bureau of Standards (NML), Gaithersburg, MD. Molecular Spectroscopy Div.

Molecular Spectroscopy Division of the National
Bureau of Standards.

Not available NTIS

Final rept.

A. Weber. 1987, 2p Pub. in Applied Spectroscopy 41, n6 p1085-1086 1987.

PB91-175257 Not available NTIS National Bureau of Standards (NEL), Boulder, CO. Chemical Engineering Science Div.

Book Review: Partitloning in Aqueous Two-Phase

Systems: Theory, Methods, Uses, and Applications to Biotechnology. Final rept.

G. F. Slaff. 1987, 1p

PB91-175174

Pub. in Jnl. of American Chemical Society 109, n5 p1606 1987.

PR91-175505 Not available NTIS National Inst. of Standards and Technology (NML),

Boulder, CO. Quantum Physics Div.
Rotational Predissociation, Vibrational Mixing, and van der Waals intermolecular Potentials of NeDF. Final rept.

C. M. Lovejoy, and D. J. Nesbitt. 1991, 16p Grant NSF-CHE86-05970

Sponsored by National Science Foundation, Washing-

Pub. in Jnl. of Chemical Physics 94, n1 p208-223, 1 Jan 91.

PB91-175562 Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Quantum Metrology Div.

Direct Determination of Molecular Orbital Symmetry of H2S Using Polarized X-ray Emission. Final rept.

R. Mayer, D. W. Lindle, S. H. Southworth, and P. L. Cowań. 1991, 7p Pub. in Physical Review A 43, n1 p235-241, 1 Jan 91.

PB91-187138 Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Center for Chemical Physics. Concerning the Formation and the Kinetics of Phenylium ions.

Final rept. P. Ausloos, S. G. Lias, T. J. Buckley, and E. E. Rogers. 1989, 13p Pub. in International Jnl. Mass Spectrom. Ion Process-

es 92, p65-77 1989.

PB91-187195 Not available NTIS National Bureau of Standards (NEL), Gaithersburg, MD. Thermodynamics Div. Critical Exponent for the Viscosity of Four Binary Liquids. Final rept.

R. F. Berg, and M. R. Moldover. 1988, 11p Contract NASA-C-86129D Sponsored by National Aeronautics and Space Admin-

istration, Cleveland, OH. Lewis Research Center. Pub. in Jnl. of Chemical Physics 89, n6 p3694-3704

PB91-187435 Not available NTIS National Bureau of Standards (NML), Gaithersburg, MD. Radiometric Physics Div. Shape Resonances in Molecular Fields.

Final rept. J. L. Dehmer, D. Dill, and A. C. Parr. 1988, 23p

See also DE84009206. Pub. in Fundamental Processes of Atomic Dynamics,

p541-563 1988.

PB91-187658

(Order as PB91-187617, PC A06/MF A01) National Inst. of Standards and Technology, Gaithersbura, MD.

Proposed New Electrolytic Conductivity Primary Standards for KCI Solutions.
Y. C. Wu, W. F. Koch, and K. W. Pratt. 1991, 11p Included in Jnl. of Research of the National Institute of Standards and Technology, v96 n2 p191-201 Mar/Apr

PB91-189233 Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Chemical Thermodynamics Div. Combustion Calorimeters.

Final rept. E. S. Domalski. 1990, 61p

Pub. in Advances in Calorimetry and Thermochemistry, v1 p51-111 1990.

PB91-189241 Not available NTIS National Inst. of Standards and Technology (IMSE),

Gaithersburg, MD. Polymers Div.

How Does Surface Roughness Affect Polymer-Surface interactions.

Final rept. J. F. Douglas. 1989, 10p

Pub. in Macromolecules 22, n9 p3707-3716 Sep 89.

Not available NTIS PB91-189381 National Bureau of Standards (NEL), Gaithersburg, MD. Thermophysics Div.

Modeling the Thermodynamic Properties of Sodium Chioride in Steam Through Extended Corresponding States.

J. S. Gallagher, and J. M. H. Levelt Sengers. 1988, 13p

Pub. in International Jnl. of Thermophysics 9, n5 p649-661 1988.

PB91-189415 Not available NTIS National Bureau of Standards (NML), Gaithersburg, MD. Molecular Spectroscopy Div.

Spectroscopic Constants for the nu9 infrared Band of HNO3.

Final rept.

A. Goldman, A. G. Maki, C. J. Howard, J. B. Burkholder, and R. Escribano. 1988, 6p Pub. in Jnl. of Molecular Spectroscopy 131, n1 p195-

PB91-189431 Not available NTIS National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Thermophysics Div.

Effect of Long Range Interfacial Forces on the Dynamics of Wetting Layers at a Liquid Vapor Interface.

Final rept.

J. L. Harden, and R. F. Kayser. 1989, 10p Pub. in Jnl. of Colloid and Interface Science 127, n2 p548-557 1989.

PB91-189514 Not available NTIS National Bureau of Standards (NEL), Gaithersburg, MD. Thermophysics Div.

Mobility Fluctuations and Electrophoretic Light

Scattering from Macromolecular Solutions. Final rept

J. B. Hubbard, and D. A. McQuarrie. 1988, 15p Pub. in Jnl. of Statistical Physics 52, n5-6 p1247-1261 1988

PB91-189548 Not available NTIS National Bureau of Standards (NML), Gaithersburg, MD. Chemical Kinetics Div.

Electronic Spectrum of the GeH3 Radical.

Final rept.

R. D. Johnson, J. W. Hudgens, and B. P. Tsai. 1988,

6p Pub. in Jnl. of Chemical Physics 89, n8 p4558-4563 1988.

PB91-189613 Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Chemical Thermodynamics Div. Energy of Combustion of Triphenylphosphate. Final rept.

D. R. Kirklin, and E. S. Domalski. 1989, 8p. Pub. in Jnl. of Chemical Thermodynamics 21, n5 p449-456 1989.

Not available NTIS National Bureau of Standards (NML), Gaithersburg,

MD. Molecular Spectroscopy Div.

Hydrogen Bonding in Pt Ammine Complexes. Final rept.

M. Krauss, K. J. Miller, and H. Basch. 1988, 4p Pub. in Chemical Physics Letters 148, n6 p577-580 1988.

Not available NTIS PR91-189837 National Bureau of Standards (NEL), Gaithersburg, MD. Thermophysics Div.

Modelling Aqueous Solutions Near the Critical Point of Water. Final rept

G. Morrison, 1988, 21p

Pub. in Jnl. of Solution Chemistry 17, n9 p887-907 1988

Not available NTIS National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Thermophysics Div. Ergodic Measures for the Simulation of Dielectric

Properties of Water.

Final rept.

R. D. Mountain, and D. Thirumalai, 1991, 8p. Sponsored by National Science Foundation, Washington, DC.

Pub. in Computer Physics Communications 62, p352-359 1991.

PB91-189852 Not available NTIS National Bureau of Standards (NML), Gaithersburg,

MD. Chemical Kinetics Div.
Polyelectrolyte Stabilized Metal Oxide Hydrosols as Catalysts for the Photooxidation of Water by Zinc Porphyrins.

Final rept. G. S. Nahor, S. Mosseri, P. Neta, and A. Harriman.

1988, 6p Pub. in Jnl. of Physical Chemistry 92, n15 p4499-4504 1988.

PB91-189902 Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Chemical Kinetics Div. Proton Affinity of Cyanogen and Ion-Molecule Reactions of C2N2(+).

Final rept. S. A. H. Petrie, M. Mautner, M. J. McEwan, and C. G. Freeman, 1989, 10p

Pub. in International Jni. of Mass Spectrometry and Ion Processes 90, n3 p241-250 1989.

PB91-189936 Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Surface Science Div.

Recent Developments in Applied Surface Science. Final rept.

C. J. Powell, 1989, 2p Pub. in Vide, Couches Minces 44, n248 p427-428 1989.

PB91-192435 Not available NTIS American Chemical Society, Washington, DC.
Journal of Physical and Chemical Reference Data, Volume 19, Number 4, July-August 1990.

Bimonthly rept.
D. R. Lide. c1990, 270p
See also PB91-192443 through PB91-192468 and
PB90-244658. Errata sheet inserted. Prepared in cooperation with American Inst. of Physics, New York. Sponsored by National Inst. of Standards and Tech-

nology, Gaithersburg, MD.

Available from American Chemical Society, 1155 16th
St., NW, Washington, DC. 20036-9976.

PB91-192443 Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Center for Atomic, Molecular and Optical Physics.

Energy Levels of Sulfur, S i Through S XVI.

Bimonthly rept. W. C. Martin, R. Zalubas, and A. Musgrove. c1990, 60p

Included in Jnl. of Physical and Chemical Reference Data, v19 n4 p821-880 Jul/Aug 90. Available from American Chemical Society, 1155 16th St., NW, Washington, DC. 20036-9976.

Not available NTIS Not available NTIS
National Inst. of Standards and Technology (NML),
Gaithersburg, MD. Chemical Thermodynamics Div.
Heat Capacities and Entropies of Organic Compounds in the Condensed Phase. Volume 2.
Bimonthly rept.

Birmonthly rept. E. S. Domalski, and E. D. Hearing. c1990, 168p Included in Jnl. of Physical and Chemical Reference Data, v19 n4 p881-1048 Jul/Aug 90. Available from American Chemical Society, 1155 16th St., NW, Washington, DC. 20036-9976. PB91-192468 Not available NTIS California Univ., San Diego, La Jolla. Dept. of Chemis-

Thermodynamics of the Krebs Cycle and Related Compounds.

Bimonthly rept.

S. L. Miller, and D. Smith-Magowan. c1990, 25p Grant NANB6-D0656

Prepared in cooperation with National Inst. of Standards and Technology (NML), Gaithersburg, MD. Chemical Thermodynamics Div.

Included in Jnl. of Physical and Chemical Reference Data, v19 n4 p1049-1074 Jul/Aug 90. Available from American Chemical Society, 1155 16th St., NW, Washington, DC. 20036-9976.

PB91-192476 Not available NTIS American Chemical Society, Washington, DC.

Journal of Physical and Chemical Reference Data, Volume 19, Number 5, September-October 1990.

Bimonthly rept.

D. R. Lide. c1990, 202p See also PB91-192484 through PB91-192534. Pre-pared in cooperation with American Inst. of Physics, New York. Sponsored by National Inst. of Standards and Technology, Gaithersburg, MD.

Available from American Chemical Society, 1155 16th St., NW, Washington, DC. 20036-9976.

PB91-192484 Not available NTIS National Inst. of Standards and Technology (NML), Boulder, CO. Thermophysics Div. Transport Properties of Fluid Oxygen.

Bimonthly rept

A. Laesecke, R. Krauss, K. Stephan, and W. Wagner. c1990, 34p

Prepared in cooperation with Stuttgart Univ. (Germany, F.R.). Inst. fuer Technische Thermodynamik und Thermische Verfahrenstechnik, and Ruhr Univ., Bochum (Germany, F.R.). Inst. fuer Thermo- und Fluiddynamik. Included in Jnl. of Physical and Chemical Reference Data, v19 n5 p1089-1122 Sep/Oct 90. Available from American Chemical Society, 1155 16th St., NW, Washington, DC. 20036-9976.

PB91-192492 Not available NTIS Universidad Autonoma Metropolitana, Mexico City. Dept. of Fisica.

Thermal Conductivity of Nine Polyatomic Gases at Low Density. Bimonthly rept.

F. J. Unbe, E. A. Mason, and J. Kestin. c1990, 14p Grants NSF-CHE85-09416, NSF-CHE88-19370

Prepared in cooperation with Brown Univ., Providence, RI. Sponsored by National Science Foundation, Washington, DC., and National Inst. of Standards and Tech-

nology, Gaithersburg, MD. Included in Jnl. of Physical and Chemical Reference Data, v19 n5 p1123-1136 Sep/Oct 90. Available from American Chemical Society, 1155 16th St., NW, Washington, DC, 20036-9976.

PB91-192500 Not available NTIS Imperial Coll. of Science and Technology, London (England). Dept. of Chemical Engineering and Chemi-

cal Technology.
Thermal Conductivity of Methane and Tetrafluoromethane in the Limit of Zero Density.

Bimonthly rept. M. J. Assael, J. Millat, V. Vesovic, and W. A. Wakeham. c1990, 11p

Sponsored by National Inst. of Standards and Technology, Gaithersburg, MD., Department of Industry, London (England), and Rostock Univ. (German D.R.). Included in Jnl. of Physical and Chemical Reference Data, v19 n5 p1137-1148 Sep/Oct 90. Available from American Chemical Society, 1155 16th St., NW, Washington, DC. 20036-9976.

Not available NTIS PR91-192518 Ecole Polytechnique, Montreal (Quebec).

Coupled Phase Diagram-Thermodynamic Analysis of the 24 Binary Systems, A2CO3-AX and A2SO4-AX Where A=Li, Na, K and X=Ci, F, NO3, OH. Bimonthly rept.

Y. Dessureault, J. Sangster, and A. D. Pelton. c1990, 30p

Sponsored by American Ceramic Society, Columbus, OH., and National Inst. of Standards and Technology,

Gaithersburg, MD. Included in Jnl. of Physical and Chemical Reference Data, v19 n5 p1149-1178 Sep/Oct 90. Available from American Chemical Society, 1155 16th St., NW, Washington, DC. 20036-9976.

PB91-192526 Not available NTIS Brown Univ., Providence, RI. Div. of Engineering. Equilibrium and Transport Properties of Gas Mixtures at Low Density: Eleven Polyatomic Gases and Five Noble Gases.

Bimonthly rept.
J. Bzowski, J. Kestin, E. A. Mason, and F. J. Uribe.

c1990, 44p Grant NANB7-D0703

Sponsored by National Inst. of Standards and Tech-

nology, Gaithersburg, MD.
Included in Jnl. of Physical and Chemical Reference
Data, v19 n5 p1179-1232 Sep/Oct 90. Available from
American Chemical Society, 1155 16th St., NW, Washington, DC. 20036-9976.

Not available NTIS PB91-192534 British Columbia Univ., Vancouver. Dept. of Mechanical Engineering. Unified Fundamental Equation for the Thermodynamic Properties of H2O.

namic Properties of M2U.

Bimonthly rept.
P. G. Hill. c1990, 42p

Sponsored by National Inst. of Standards and Technology, Gaithersburg, MD.
Included in Jnl. of Physical and Chemical Reference
Data, v19 n5 p1233-1274 Sep/Oct 90. Available from
American Chemical Society, 1155 16th St., NW, Washiston DC 20026-0076 ington, DC. 20036-9976.

PB91-192542 Not available NTIS American Chemical Society, Washington, DC.

Journal of Physical and Chemical Reference Data, Volume 19, Number 6, November-December 1990.

Bimonthly rept.
D. R. Lide. c1990, 389p
See also PB91-192559 through PB91-192583. Errata see also PB91-192393 tillough PB91-192393. Ellata sheet inserted. Prepared in cooperation with American Inst. of Physics, New York. Sponsored by National Inst. of Standards and Technology, Gaithersburg, MD. Available from American Chemical Society, 1155 16th St., NW, Washington, DC. 20036-9976.

PB91-192559 Not available NTIS Rostock Univ. (German D.R.). Fachbereich Chemie. Viscosity and Thermal Conductivity of Pure Monatomic Gases from Their Normal Boiling Point Up to 5000 K in the Limit of Zero Density and at 0.101325 MPa.

E. Bich, J. Millat, and E. Vogel. c1990, 17p Sponsored by National Inst. of Standards and Tech-

nology, Gaithersburg, MD. Included in Jnl. of Physical and Chemical Reference Data, v19 n6 p1289-1306 Nov/Dec 90. Available from American Chemical Society, 1155 16th St., NW, Washington, DC. 20036-9976.

PB91-192575
National Inst. of Standards and Technology (NML), Rational initial of Standards and Technology (MMZ), Gaithersburg, MD. Molecular Physics Div. Vibrational and Electronic Energy Levels of Polyatomic Transient Molecules. Supplement 1.

Bimonthly rept. M. E. Jacox. c1990, 160p Sponsored by National Inst. of Standards and Tech-

oponiosed by National Inst. of Standards and Technology, Gaithersburg, MD. Included in Jnl. of Physical and Chemical Reference Data, v19 n6 p1387-1546 Nov/Dec 90. Available from American Chemical Society, 1155 16th St., NW, Washington, DC. 20036-9976.

PB91-192583 Not available NTIS Texas A and M Univ., College Station. Thermodynamics Research Center.

ics Hesearch Center.
Thermodynamic and Thermophysical Properties
of Organic Nitrogen Compounds. Part 1. Methanamine, Ethanamine, 1- and 2-Propanamine, Benzenamine, 2-, 3-, and 4-Methylbenzenamine.

Bilmonthly rept.
J. Chao, N. A. M. Gadalla, B. E. Gammon, K. N.
Marsh, A. S. Rodgers, G. R. Somayajulu, and R. C. Wilhoit. c1990, 70p

Sponsored by National Inst. of Standards and Tech-

nology, Gaithersburg, MD. Included in Jnl. of Physical and Chemical Reference Data, v19 n6 p1547-1616 Nov/Dec 90. Available from American Chemical Society, 1155 16th St., NW, Washington, DC. 20036-9976.

PC A04/MF A01 PR91-194472 National Inst. of Standards and Technology (CSTL), Gaithersburg, MD.

Experimental Thermal Conductivity, Thermal Diffusivity, and Specific Heat Values for Mixtures of Nitrogen, Oxygen, and Argon. Final rept.

R. A. Perkins, and M. T. Cieszkiewicz. Mar 91, 65p NISTIR-3961

See also PB89-148407. Sponsored by Wright Re-search and Development Center, Wright-Patterson AFB, OH., and National Aeronautics and Space Administration, Cleveland, OH. Lewis Research Center.

PB91-194837 Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Molecular Spectroscopy Div. Theoretical Model of Metal Binding Sites in Proteins. Final rept.

M. Krauss, and W. J. Stevens. 1989, 13p Pub. in Progress in Clinical and Biological Research 289, p95-107 1989.

Not available NTIS PB91-194944 National Inst. of Standards and Technology (IMSE),

Gaithersburg, MD. Ceramics Div.
Reflection-Extended-X-ray-Absorption-FineStructure Spectroscopy at the Carbon K-Edge.

Pub. in Materials Research Society Symposia Proceedings, v143 p157-162 1989.

PB91-194951 Not available NTIS National Inst. of Standards and Technology (IMSE),

Gaithersburg, MD. Ceramics Div.
Surface-Extended X-ray-Absorption Fine-Structure Experiments at Atmospheric Pressure by Means of a Photocathode Proportional Counter with Monolayer Sensitivity. Final rept.

G. G. Long, D. K. Tanaka, J. Kruger, G. A. Danko, and D. A. Fischer. 1989, 7p Pub. in Physical Review B 39, n15 p651-657 1989.

Not available NTIS PB91-194985 National Inst. of Standards and Technology (NML), Gaithersburg, MD. Center for Chemical Technology. PLOTMD: An Interactive Program to Modify Molecular Plots on a Graphics Terminal.

J. C. Luo, G. L. Gilliland, and H. L. Ammon. 1989, 1p Pub. in Jnl. of Applied Crystallography 22, p186 Apr 89.

PB91-195008 Not available NTIS National Inst. of Standards and Technology (IMSE), Gaithersburg, MD. Metallurgy Div.
Atomistic Diffusion Equations and Kinetic Forces. Final rept.

Sponsored by Office of Naval Research, Arlington, VA. Pub. in Diffusion Analysis and Applications, p3-17

Not available NTIS PB91-195065 National Bureau of Standards (NML), Gaithersburg, MD. Chemical Kinetics Div.

Carbon Acidities of Aromatic Compounds. 2. Ionic Probes of Aromaticity in Annelated Rings. Final rept.

M. Mautner, J. F. Liebman, and S. A. Kafafi. 1988,

Pub. in Jnl. of the American Chemical Society 110, n18 p5937-5941 1988.

PB91-195073 Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Chemical Kinetics Div. Thermal Decomposition of Ions. 3. Protonated Ethanol and Diethyl Ether.

Final rept.

M. Mautner, and L. W. Sieck. 1989, 11p See also PB87-162301.

Pub. in International Jnl. of Mass Spectrometry and Ion Processes 92, p123-133 1989.

PB91-195131 Not available NTIS National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Thermophysics Div. DIpole Moments of Seven Partially Halogenated Ethane Refrigerants.

Final rept. C. W. Meyer, and G. Morrison. 1991, 7p Pub. in Jnl. of Physical Chemistry 95, n9 p3860-3866, 2 May 91.

PB91-195214 Not available NTIS National Bureau of Standards (NML), Gaithersburg, MD. Chemical Kinetics Div. Proton Affinities and pKa Values of Tetraalkylhydrazines.

Final rept. S. F. Nelsen, M. Mautner, D. T. Rumack, and L. W. Sieck. 1988, 6p Pub. in Jnl. of the American Chemical Society 110, n19

p6303-6308 1988.

Not available NTIS PB91-195230 National Inst. of Standards and Technology (NML), Gaithersburg, MD. Chemical Kinetics Div.

Rate Constants for Reduction of Substituted Methyiperoxyl Radicals by Ascorbate lons and N,N,N',N'-Tetramethyl-Para-Phenylenedlamine. Final rept.

P. Neta, S. Steenken, L. V. Shastri, R. E. Huie, S. Mosseri, J. P. Mittal, and P. Maruthamuthu. 1989, 6p. Pub. in Jnl. of Physical Chemistry 93, n10 p4099-4104

PB91-195255 Not available NTIS National Bureau of Standards (IMSE), Gaithersburg, MD. Reactor Radiation Div.

Dynamics of Molecular Hydrogen Adsorbed in CoNa-A Zeollte. Final rept.

Pillariept.
J. M. Nicol, J. Howard, and J. Eckert. 1988, 5p
Pub. in Jnl. of Physical Chemistry 92, n25 p7117-7121 1988.

PB91-195297 Not available NTIS National Bureau of Standards (NML), Gaithersburg, MD. Quantum Metrology Group.

Anomalous Th M3O1 X-ray Emission Spectrum of ThO2. Final rept.

M. Ohno, and R. E. LaVilla. 1988, 4p Pub. in Physical Review B 37, n18 p915-918 1988.

PB91-195305 Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Quantum Metrology Div.

Many Electron Effects in Lgamma2,3 X-ray Emission Spectroscopy Spectrum of BaO. Final rept.

M. Ohno, and R. E. LaVilla. 1989, 7p Pub. in Physical Review B 39, n13 p8845-8851 1989.

PB91-195313 Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Quantum Metrology Div.

Many-Electron Effects In Lgamma2,3 XES Spectra from Rare Earth Elements. Final rept.

M. Ohno, and R. E. LaVilla. 1989, 6p Pub. in Physical Review B 39, n13 p8852-8857 1989.

PB91-195370 Not available NTIS National Inst. of Standards and Technology (NML), Reactions of C5H3(+) and C5H5(+) lons with Acetylene and Diacetylene.
Final rept.

F. Ozturk, S. G. Lias, M. Moini, F. W. Brill, and T. J. Buckley. 1989, 7p See also AD-A197 087

Pub. in Jnl. of Physical Chemistry 93, n10 p4038-4044 1989

PB91-195735 Not available NTIS National Bureau of Standards (IMSE), Gaithersburg,

High-Temperature High-Pressure Raman Spectra from Liquid Water.

Final rept.
G. E. Walrafen, W. H. Yang, M. S. Hokmabadi, and
G. J. Piermanni. 1988, 3p
Pub. in Jnl. of Physical Chemistry 92, n15 p4540-4542

PB91-200782 Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Chemical Kinetics Div. Reactivities of Chiorine Atoms and Peroxyl Radi-

cais Formed In the Radiolysis of Dichloromethane. Final rept.

Z. B. Alfassi, S. Mosseri, and P. Neta. 1989, 6p. Sponsored by Department of Energy, Washington, DC. Pub. in Physical Chemistry 93, n4 p1380-1385 1989.

Not available NTIS PB91-202846 National Bureau of Standards (NML), Gaithersburg, MD. Molecular Spectroscopy Div.
Time- and State-Resolved Measurements of Nitric

Oxide Dimer Infrared Photodissociation.

Final rept. M. P. Casassa, J. C. Stephenson, and D. S. King.

1988, 11p Pub. in Jnl. of Chemical Physics 89, n4 p1966-1976

PB91-202853 Not available NTIS National Bureau of Standards (IMSE), Gaithersburg,

Grain Boundaries in a 2-D Superlattice. Final rept.

P. Cenedese, R. Kikuchi, and J. W. Cahn. 1988, 6p Pub. in Materials Research Society Symposium Proceedings 122, p231-236 1988.

Not available NTIS PB91-202986 National Inst. of Standards and Technology (NML), Boulder, CO. Quantum Physics Div.

Causes of SIH4 Dissociation in Sliane dc Discharges.

D. A. Doughty, and A. Gallagher. 1990, 5p Contract SERI-XB-2-02189 Sponsored by Solar Energy Research Inst., Golden,

Final rept.

Pub. in Physical Review A 42, n10 p6166-6170, 15 Nov

PB91-202994 Not available NTIS National Inst. of Standards and Technology (NML), Boulder, CO. Quantum Physics Div. Silane Dissociation Products In Deposition Dis-

charges.

J. R. Doyle, D. A. Doughty, and A. Gallagher. 1990, 10p

Contract SERI-XG-1-1216

Sponsored by Solar Energy Research Inst., Golden,

Pub. in Jnl. of Applied Physics 68, n9 p4375-4384, 1 Nov 90.

PB91-203018 Not available NTiS National Bureau of Standards (NML), Gaithersburg, MD. Chemical Kinetics Div.

Ultraviolet Absorption of the Vinyl Radical and Reaction with Oxygen.

Final rept. A. Fahr, and A. H. Laufer. 1988, 4p

Pub. in Jnl. of Physical Chemistry 92, n26 p7229-7232

PB91-203034 Not available NTIS National Inst. of Standards and Technology (IMSE), Gaithersburg, MD. Ceramics Div.
Lanthanide Coordination Chemistry: Spectrosco-

pic Properties of Terblum and Europlum Poly(Pyrazol-1-YI) Borate and Poly(Imidazol-1-YI) Borate.

Final rept.

R. A. Faltynek. 1989, 8p

Pub. in Jnl. of Coordination Chemistry 20, n1 p73-80

PB91-203075 Not available NTIS National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Chemical Process Metrology Div. and Electronic Properties SnO2(110) Model Gas Sensors. Final rept.

T. B. Fryberger, J. W. Erickson, and S. Semancik.

1989, 7p Pub. in Surface and Interface Analysis 14, n1-2 p83-89 Jan/Feb 89.

Not available NTIS PB91-203232 National Inst. of Standards and Technology (NML), Gaithersburg, MD. Chemical Kinetics Div.

Rate Constants for Hydrogen Abstraction Reactions of the Sulfate Radical, SO4- Alkanes and Ethers.

Final rept.

R. E. Huie, and C. L. Clifton. 1989, 9p Pub. in International Jnl. of Chemical Kinetics 21, n8 p611-619 Aug 89.

PB91-203273 Not available NTIS National inst. of Standards and Technology (NML), Gaithersburg, MD. Molecular Physics Div.

Production and Spectroscopy of Small Polyatomic
Molecular Ions Isolated in Solid Neon.

M. E. Jacox, and W. E. Thompson. 1990, 10p Sponsored by Army Research Office, Arlington, VA. Pub. in High Temperature Science 28, p225-234 1990.

Not available NTIS PB91-203281 National Bureau of Standards (NML), Gaithersburg, MD. Chemical Thermodynamics Div.

Resonance Enhanced Multiphoton Ionization
Spectra of the GeF and GeCl Radicals from 400-Final rept.

R. D. Johnson, J. W. Hudgens, and B. P. Tsai. 1988,

Pub. in Jnl. of Chemical Physics 89, n10 p6064-6068 1988

PB91-203331 Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Molecular Spectroscopy Div.

Molecular Desorption from Solid Surfaces: Laser Diagnostics and Chemical Dynamics.

Final rept.

D. S. King, and R. R. Cavanagh. 1989, 45p

Pub. in Advances in Chemical Physics 76, p45-89 1989

PB91-203448 Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Molecular Spectroscopy Div. Microwave Spectrum and Molecular Structure of the N2-H20 Complex. Final rept.

H. O. Leung, M. D. Marshall, R. D. Suenram, and F. J. Lovas. 1989, 13p

Pub. in Jnl. of Chemical Physics 90, n2 p700-712, 15 Jan 89.

PB91-203471 Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Surface Science Div.

Chemical Effects of Ne+ Bombardment on the MoS2(0001) Surface Studied by High-Resolution Photoelectron Spectroscopy.

Final rept.

J. R. Lince, T. B. Stewart, M. M. Hills, P. D. Fleischauer, J. A. Yarmoff, and A. Taleb-Ibrahimi. 1989, 19p

Pub. in Surface Science 210, n3 p387-405 1989.

PB91-203547 Not available NTIS National Bureau of Standards (NML), Gaithersburg, MD. Chemical Kinetics Div.

Ionic Hydrogen Bonds. Part 1. Thermochemistry, Structural Implications, and Role In Ion Solvation. Final rept.

M. Mautner, 1987, 34p See also AD-A178 839.

Pub. in Molecular Structure and Energetics, Chapter 3, v4 p71-104 1987.

PB91-203562 Not available NTIS National Inst. of Standards and Technology (NML), Boulder, CO. Quantum Physics Div.

Structural Dependence of HF Vibrational Red Shifts In ArnHF, n = 1-4, via High-Resolution Silt Jet Infrared Spectroscopy.

Final rept.

A. McIlroy, R. Lascola, C. M. Lovejoy, and D. J. Nesbitt. 1991, 9p

Grant NSF-CHE86-05970

Sponsored by National Science Foundation, Washing-

Pub. in Jnl. of Physical Chemistry 95, n7 p2636-2644

PB91-203661 Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Chemical Kinetics Div. Radiolytic Studies of the Redox Reactions of Ruthenlum Porphyrins. Final rept

S. Mosseri, P. Neta, and P. Hambright. 1989, 5p. Pub. in Jnl. of Physical Chemistry 93, n6 p2358-2362 1989.

PB91-203695 Not available NTIS National Inst. of Standards and Technology (NML), Boulder, CO. Quantum Physics Div.

#### CHEMISTRY

### Physical & Theoretical Chemistry

Progress on the Determination of intermolecular Potential Energy Surfaces from High Resolution Spectroscopy. Final rept. D. J. Nesbitt. 1990, 10p

Grants NSF-CHE86-05970, NSF-PHY86-04504 Sponsored by National Science Foundation, Washing-

Pub. in Dynamics of Polyatomic Van der Waals Complexes, p461-470 1990.

PB91-203703 Not available NTIS National Inst. of Standards and Technology (NML), Boulder, CO. Quantum Physics Div. Multiple Intermolecular Bend Vibrational Excita-

tion of a Hydrogen Bond: An Extended Infrared Study of OCOHF.

Final rept.
D. J. Nesbitt, and C. M. Lovejoy. 1990, 15p.

Grant NSF-CHE86-05970

Sponsored by National Science Foundation, Washington, DC.

Pub. in Jnl. of Chemical Physics 93, n11 p7716-7730, 1 Dec 90.

Not available NTIS PB91-203760 National Bureau of Standards (NML), Gaithersburg,

MD. Chemical Kinetics Div.

Dissociation Energetics of Simple Diazirines by Photon and Electron impact.

Final rept.

H. Okabe. 1987, 14p Pub\_in Chemistry of Diazirines, Chapter 7, v2 p19-32 1987.

PB91-203844 Not available NTIS National Bureau of Standards (NML), Gaithersburg,

MD. Molecular Spectroscopy Div. vibrational, Rotational, and Tunneling Dependence of Vibrational Predissociation in the HF Dimer.

Final rept.

A. S. Pine, and G. T. Fraser. 1988, 8p

Pub. in Jnl. of Chemical Physics 89, n11 p6636-6643 1988.

PB91-203927 Not available NTIS National Inst. of Standards and Technology (CSTL), Gaithersburg, MD. Biotechnology Div.
Frequency Dependence of Catalyzed Reactions in

a Weak Oscillating Field.

Final rept.

B. Robertson, and R. D. Astumian. 1991, 6p Pub. in Jnl. of Chemical Physics 94, n11 p7414-7419, 1 Jun 91.

PR91-204008 Not available NTIS National Inst. of Standards and Technology (NML), Boulder, CO. Quantum Physics Div. High-Resolution Infrared Flash Kinetic Spectroscopy of OH Radicais.

Final rept. A. Schiffman, D. D. Nelson, M. S. Robinson, and D.

J. Nesbitt. 1991, 8p Contract AFOSR-F49620-86-C-0056

Sponsored by Air Force Office of Scientific Research, Bolling AFB, DC.

Pub. in Jnl. of Physical Chemistry 95, n7 p2629-2636

PB91-204024 Not available NTIS National Inst. of Standards and Technology (NML), Boulder, CO. Quantum Physics Div.
Investigation of Internal Rotor Dynamics of NeDCI

and ArDCi via Infrared Absorption Spectroscopy. Final rept.

M. Schuder, D. Nelson, and D. J. Nesbitt. 1991, 16p Grants NSF-CHE86-05970, NSF-PHY86-04504 Sponsored by National Science Foundation, Washing-

Pub. in Jnl. of Chemical Physics 94, n9 p5796-5811, 1 May 91.

PB91-204065 Not available NTIS National Inst. of Standards and Technology (NEL),

Gaithersburg, MD. Thermophysics Div. Thermodynamic Properties of Aqueous Solutions

at High Temperatures; Needs, Methods, and Challenges. Final rept.

J. M. H. Levelt Sengers. 1990, 17p Pub. in International Jnl. of Thermophysics 11, n2 p399-415 1990.

PB91-216713

(Order as PB91-216705, PC A07/MF A01) National Inst. of Standards and Technology, Boulder, CO.

High-Temperature Translent Hot-wire Thermal

Conductivity Apparatus for Fluids. R. A. Perkins, H. M. Roder, and C. A. Nieto de Castro. 1991, 23p

Prepared in cooperation with Lisbon Univ. (Portugal). Dept. de Quimica.

Included in Jnl. of Research of the National Institute of Standards and Technology, v96 n3 p247-269 May/Jun

PB91-236521 Not available NTIS National Inst. of Standards and Technology (MSEL), Gaithersburg, MD. Office of Intelligent Processing of Materials.

Problem of Detailed Balance and Model Lineshapes In Collision-Induced Rotovibrational Bands: H2-H2 and H2-He.

Final rept.

G. Birnbaum, and A. Borysow. 1991, 12p Pub. in Molecular Physics 73, n1 p57-68 1991.

PB91-236547 Not available NTIS National Inst. of Standards and Technology (CSTL), Gaithersburg, MD. Surface and Microanalysis Science

Photodissociation Dynamics of Mo(CO)6 at 266 nm and 355 nm: CO Photofragment Kinetic-Energy and Internal-State Distributions.

Final rept.

S. A. Buntin, R. R. Cavanagh, L. J. Richter, and D. S. King. 1991, 149 Sponsored by Department of Energy, Washington, DC. Pub. in Jnl. of Chemical Physics 94, n12 p7937-7950, 15 Jun 91.

Not available NTIS PB91-236570 National Inst. of Standards and Technology (MSEL), Gaithersburg, MD. Polymers Div.

Temperature Gradient in Differential Scanning Calorlmetry.

Final rept. S. S. Chang. 1991, 7p

Ar-Ch3CN.

Pub. in Thermochimica Acta 178, p195-201 1991.

PB91-236661 Not available NTIS National Inst. of Standards and Technology (PL), Gaithersburg, MD. Molecular Physics Div.

Rotational Spectrum and Structure of the Complex

Final rept. R. S. Ford, R. D. Suenram, G. T. Fraser, F. J. Lovas,

and K. R. Leopold, 1991, 7p Grant NSF-CHE88-07895

Sponsored by National Science Foundation, Washing-

Pub. in Jnl. of Chemical Physics 94, n8 p5306-5312, 15 Apr 91.

PB91-236679 Not available NTIS National Inst. of Standards and Technology (PL), Gaithersburg, MD. Molecular Physics Div. Optothermai-Detected Microwave-Sideband CO2-Laser Spectroscopy of Ar-NH3.

Final rept. G. T. Fraser, A. S. Pine, and W. A. Kreiner. 1991, 7p Pub. in Jnl. of Chemical Physics 94, n11 p7061-7067, 1 Jun 91.

PB91-236737 Not available NTIS National Inst. of Standards and Technology (PL), Gaithersburg, MD. Molecular Physics Div. Van der Waals Complexes In 1,3-Dipolar Cycload-

dition Reactions: Ozone-Ethylene. Final rept. C. W. Gillies, J. Z. Gillies, R. D. Suenram, F. J. Lovas, E. Kraka, and D. Cremer. 1991, 10p Pub. in Jnl. of the American Chemical Society 113, n7

p2412-2421 1991.

Not available NTIS PB91-236778 National Inst. of Standards and Technology (CSTL), Gaithersburg, MD. Thermophysics Div.

Phase Equilibria and Critical Lines in Model Water/ Salt Mixtures.

Final rept.

A. H. Harvey. 1991, 6p Pub. in Jnl. of Chemical Physics 95, n1 p479-484, 1 Jul

PB91-236836 Not available NTIS National Inst. of Standards and Technology (PL), Gaithersburg, MD. Molecular Physics Div. VIbrational Spectra of Molecular Ions Isolated in Solid Neon. 6. CO4(1-).

Final rept. M. E. Jacox, and W. E. Thompson. 1991, 7p See also PB91-149906.

Pub. in Jnl. of Physical Chemistry 95, n7 p2781-2787, 4

PB91-236851 Not available NTIS National Inst. of Standards and Technology, Gaithersburg, MD.

Temperature Measurements In Flames Using Thermally Assisted Laser-induced Fluorescence of Ga. Final rept.

R. Joklik, J. Horvath, and H. Semerjian, 1991, 8p Contract N0001989IPB7387

Sponsored by Naval Air Systems Command, Washing-

Pub. in Applied Optics 30, n12 p1497-1504, 20 Apr 91.

PB91-236869 Not available NTIS National Inst. of Standards and Technology (PL), Molecular-Beam Optothermal Spectroscopy of the 9.6 mum nu14. Final rept.

M. L. Junttila, J. L. Domenech, G. T. Fraser, and A. S. Pine. 1991, 8p

Sponsored by National Aeronautics and Space Administration, Washington, DC.
Pub. in Jnl. of Molecular Spectroscopy 147, p513-520

Not available NTIS PB91-236885

National Inst. of Standards and Technology (MSEL), Gaithersburg, MD. Polymers Div. Temperature Dependence of Probe Diffusion in **Buik Polymer Matrices.** Final rept. H. Kim, D. Waldow, C. Han, Q. Tran-Cong, and M.

Yamamoto. 1991, 5p Pub. in Polymer Communications 32, n4 p108-112

1991.

PB91-236984 Not available NTIS National Inst. of Standards and Technology (NML), Boulder, CO. Time and Frequency Div. Heterodyne Frequency Measurements of CO and OCS Beyond 2100 cm(-1).

Final rept. A. G. Maki, J. S. Wells, and D. A. Jennings. 1990, 6p Sponsored by National Aeronautics and Space Administration, Washington, DC. Office of Atmospheric Research.

Pub. in Jnl. of Molecular Spectroscopy 144, p224-229

PB91-237016 Not available NTIS National Inst. of Standards and Technology (PL), Gaithersburg, MD. Molecular Physics Div. Perpendicular Bands of Cyclopropane In the

3.5mum Region.

Final rept. D. W. Merdes, J. Pliva, and A. S. Pine. 1991, 17p Pub. in Jnl. of Molecular Spectroscopy 147, p431-447

PB91-237032 Not available NTIS National Inst. of Standards and Technology (CSTL), Gaithersburg, MD. Surface and Microanalysis Science

Direct Detection of Atom Vaporization by Laser Resonance ionization as a Probe of Gas-Surface Chemisorption Mechanisms.

M. H. Mintz, P. Shuker, and J. Fine. 1990, 5p Pub. in Surface Science Letters 238, pL473-L477

Not available NTIS PB91-237149 National Bureau of Standards (NEL), Boulder, CO. Chemical Engineering Science Div.

Mass Transfer Coefficients in Two-Phase Aqueous Extraction. Final rept.

T. A. Patil, S. K. Sikdar, S. B. Sawant, and J. B.

Joshi. 1988, 6p Pub. in Chemical Engineering Jnl. and Biochemical Engineering Jnl. 39, n1 pB1-B6 1988.

Not available NTIS PB91-237164 National Inst. of Standards and Technology (PL), Gaithersburg, MD. Ionizing Radiation Div. Molecular-Orbital Studies via Satellite-Free X-ray

Fluorescence: Cl K Absorption and K-Valence-Level Emission Spectra of Chlorofluoromethanes. Final rept.

Final rept.

R. C. C. Perera, P. L. Cowan, D. W. Lindle, R. E. LaVilla, T. Jach, and R. D. Deslattes. 1991, 10p Sponsored by Department of Energy, Washington, DC. Pub. in Physical Review A 43, p3609-3618 1991.

Not available NTIS PB91-237172 National Inst. of Standards and Technology (PL), Gaithersburg, MD. Molecular Physics Div.

Hydration of Carbon Dioxide: The Structure of
H2O-H2O-CO2 from Microwave Spectroscopy.

Final rept. K. I. Peterson, R. D. Suenram, and F. J. Lovas. 1991,

Pub. in Jnl. of Chemical Physics 94, n1 p106-117, 1 Jan 91.

PB91-237487 Not available NTIS National Inst. of Standards and Technology (PL), Gaithersburg, MD. Molecular Physics Div. Microwave Spectra and Electric Dipole Moments

of X(4)Sigma(1-)1/2 VO and NbO.

Final rept. R. D. Suenram, G. T. Fraser, F. J. Lovas, and C. W. Gillies. 1991, 9p Pub. in Jnl. of Molecular Spectroscopy 148, p114-122

1991.

Not available NTIS PB91-237529 National Inst. of Standards and Technology (CSTL), Gaithersburg, MD. Chemical Kinetics and Thermodynamics Div.

Stabilities of Substituted Benzyi Radicals: Dissoclation Rates of Aminoethylbenzenes, Hydrox-yethylbenzenes, and Cyanoethylbenzenes. Final rept.

M. M. Suryan, and S. E. Stein. 1989, 4p Pub. in Jnl. of Physical Chemistry 93, n21 p7362-7365 1989

PB91-237537 Not available NTIS National Inst. of Standards and Technology (CSTL), Gaithersburg, MD. Chemical Kinetics and Thermodynamics Div.

Dissociation of Substituted Anisoles: Substituent Effects on Bond Strengths.

Final rept.

M. M. Survan, S. E. Stein, and S. A. Kafafi, 1989, 7p. Pub. in Jnl. of the American Chemical Society 111, n13 p4594-4600 1989.

PB91-237636 Not available NTIS National Bureau of Standards (IMSE), Gaithersburg,

MD. Reactor Radiation Div.

Neutron Spectroscopic Evidence for Adsorbed Hydroxyl Species on Platinum Black.

T. J. Udovic, J. J. Rush, and R. R. Cavanagh. 1988,

Pub. in Jnl. of the American Chemical Society 110, n16 p5590-5591 1988.

PB91-237651 Not available NTIS National Inst. of Standards and Technology (CSTL), Boulder, CO. Thermophysics Div.
Extended Phase Rule for Nonreactive, Multiphase,

Multicomponent Chemical Systems.

Final rept.

L. J. Van Poolen. 1990, 13p Pub. in Fluid Phase Equilibria 58, n1-2 p133-145, 1 Jun

PB91-237693 Not available NTIS National Inst. of Standards and Technology (MSEL), Gaithersburg, MD. Ceramics Div.

Database and Retrieval System for the NBS Tables of Chemical Thermodynamic Properties. Final rept.

P. Wang, and D. B. Neumann. 1989, 8p. Pub. in Jnl. of Chemical Information and Computer Sciences 29, n1 p31-38 1989.

PB91-237701 Not available NTIS National Inst. of Standards and Technology (MSEL), Gaithersburg, MD. Ceramics Div.

Surface Oxidation Kinetics of Si3N4 - 4% Y2O3
Powders Studied by Bremsstrahlung-Excited Auger Spectroscopy. Final rept.

P. S. Wang, S. M. Hsu, S. G. Malghan, and T. N. Wittberg. 1991, 4p Pub. in Jnl. of Materials Science 26, p3249-3252 1991.

Not available NTIS PB91-237719 National Inst. of Standards and Technology (MSEL), Gaithersburg, MD. Ceramics Div.

Oxidation Kinetics of Silicon Carbide Whiskers

Studled by X-ray Photoelectron Spectroscopy.

Final rept.
P. S. Wang, S. M. Hsu, and T. N. Wittberg. 1991, 4p Pub. in Jnl. of Materials Science 26, p1655-1658 1991.

PB91-237784 Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Center for Chemical Physics. Rovibrational Analysis of the nu7(1) Intermolecu-lar Hydrogen Bond Bending Vibration in HCN-HF Using Far Infrared Fourier Transform Spectrosco-

py. Final rept. R. A. Wofford, W. J. Lafferty, W. B. Olsen, R. S. Ram, A. Quinonez, and J. W. Bevan. 1988, 6p Pub. in Chemical Physics Letters 152, n4-5 p299-304 1988

Not available NTIS PB91-237859 National Inst. of Standards and Technology (IMSE), Gaithersburg, MD. Polymers Div.

Evaluation of Liquid Junction Potentials and Determination of pH Values of Strong Acids at Moderate Ionic Strengths. Final rept.

Y. C. Wu, W. F. Koch, and D. Feng. 1989, 9p. Pub. in Jnl. of Solution Chemistry 18, n7 p641-649 1989.

Not available NTIS PB91-237867 National Inst. of Standards and Technology (CSTL), Gaithersburg, MD. Biotechnology Div.
Electrochemical Behavior of Ferrocene in Polyethvlene Oxide-400.

Final rept.

W. T. Yap, E. A. Blubaugh, R. A. Durst, and C. K.

Chiang, 1989, 4p Pub. in Jnl. of the Electrochemical Society 136, n9 p2588-2591 1989.

PB92-110113 Not available NTIS American Chemical Society, Washington, DC.
Journal of Physical and Chemical Reference Data, Volume 20, Number 1, 1991. Bimonthly rept.

D.R. Lide. c1991, 202p See also PB92-110121 through PB92-110154, PB92-110162, PB92-110212, and PB91-192542. Errata sheet inserted. Prepared in cooperation with American Inst. of Physics, New York. Sponsored by National Inst. of Standards and Technology, Gaithersburg, MD. Available from American Chemical Society, 115 16th St., NW, Washington, DC. 20036-9976.

#### PB92-110121

(Order as PB92-110113) Japan Atomic Energy Research Inst., Tokai.

Spectral Data and Grotrlan Diagrams for Highly Ionized Copper, Cu X-Cu XXIX. T. Shirai, T. Nakagaki, Y. Nakai, J. Sugar, and K. Ishii. c1991, 81p

Prepared in cooperation with National Inst. of Standards and Technology, Gaithersburg, MD., Kyoto Univ. (Japan), and Hiroshima-Denki Inst. of Tech. (Japan). Included in Jnl. of Physical and Chemical Reference Data, v20 n1 p1-81 1991. Available from American Chemical Society, 1155 16th St., NW, Washington, DC. 20036-9976.

#### PB92-110139

(Order as PB92-110113) National Inst. of Standards and Technology, Gaithersburg, MD.

burg, MD.

Wavelengths and Energy Level Classifications of Magnesium Spectra for All Stages of Ionization (Mg I through Mg XII).

V. Kaufman, and W. C. Martin. c1991, 70p Included in Jnl. of Physical and Chemical Reference Data, v20 n1 p83-152 1991. Available from American Chemical Society 1155 1615. St. Natl. Westerdam Chemical Society, 1155 16th St., NW, Washington, DC, 20036-9976.

#### PB92-110147

(Order as PB92-110113)

Iowa Univ., Iowa City. Spectroscopy and Structure of the Alkali Hydride Diatomic Molecules and Their ions.
W. C. Stwalley, W. T. Zemke, and S. C. Yang. c1991,

35p

Prepared in cooperation with Wartburg Coll., Waverley, IA. Dept. of Chemistry, and Rhode Island Univ., Kingston. Dept. of Chemistry.

Included in Jnl. of Physical and Chemical Reference Data, v20 n1 p153-187 1991. Available from American Chemical Society, 1155 16th St., NW, Washington, DC. 20036-9976.

PB92-110154

(Order as PB92-110113)

Kent State Univ., OH.

#### CHEMISTRY

### **Physical & Theoretical Chemistry**

Critical Evaluation of Liquid Crystal Transition Temperatures i: 4,4'-Alkyl/alkoxyphenylben-

T. T. Blair, M. E. Neubert, M. Tsai, and C. Tsai. c1991, 16p

Included in Jnl. of Physical and Chemical Reference Data, v20 n1 p189-204 1991. Available from American Chemical Society, 1155 16th St., NW, Washington, DC. 20036-9976.

PB92-110162 Not available NTIS American Chemical Society, Washington, DC.
Journal of Physical and Chemical Reference Data, Volume 20, Number 2, March-April 1991. Bimonthly rept.

D. R. Lide. c1991, 234p See also PB92-110170 through PB92-110204, PB92-110212, PB92-110113, and PB91-192542. Prepared in cooperation with American Inst. of Physics, New York. Sponsored by National Inst. of Standards and Technology, Gaithersburg, MD.

Available from American Chemical Society, 1155 16th St., NW, Washington, DC. 20036-9976.

#### PB92-110170

(Order as PB92-110162) National Inst. of Standards and Technology (NML), Gaithersburg, MD. Chemical Kinetics Div.
Chemical Kinetic Data Base for Combustion Chem-Istry. Part 5. Propene.

W. Tsang. c1991, 53p Included in Jnl. of Physical and Chemical Reference Data, v20 n2 p221-273 Mar/Apr 91. Available from American Chemical Society, 1155 16th St., NW, Washington, DC. 20036-9976.

#### PB92-110188

(Order as PB92-110162) National Inst. of Standards and Technology (NML), Boulder, CO. Thermophysics Div.

Thermophysical Properties of Ethane. D. G. Friend, H. Ingham, and J. F. Ely. c1991, 73p Included in Jnl. of Physical and Chemical Reference Data, v20 n2 p275-347 Mar/Apr 91. Available from American Chemical Society, 1155 16th St., NW, Washington, DC. 20036-9976.

#### PB92-110204

(Order as PB92-110162) Skola Chemicko-Technologicka, Prague Vvsoka (Ćzechoslovakia).

Heat Capacities of Organic Compounds in Liquid

State. 2. C1 to C18 n-Alkanes.
V. Rizicka, M. Zabransky, and V. Majer. c1991, 52p
Prepared in cooperation with Clermont-Ferrand-2 Univ., Aubiere (France).

Included in Jnl. of Physical and Chemical Reference Data, v20 n2 p405-444 Mar/Apr 91. Available from American Chemical Society, 1155 16th St., NW, Washington, DC. 20036-9976.

PB92-110212 Not available NTIS American Chemical Society, Washington, DC.
Journal of Physical and Chemical Reference Data,
Volume 20, Number 3, May-June 1991.

Bimonthly rept.

Bimonthly rept.
D. R. Lide. c1991, 128p
See also PB92-110220 through PB92-110253, PB92110113 and PB92-110162. Prepared in cooperation with American Inst. of Physics, New York. Sponsored by National Inst. of Standards and Technology, Gaithersburg, MD. Available from American Chemical Society, 1155 16th

St., NW, Washington, DC 20036-9976.

#### PB92-110220

(Order as PB92-110212) California Univ., Riverside. Statewide Air Pollution Research Center.

Kinetics and Mechanisms of the Gas-Phase Reactions of the NO3 Radical with Organic Compounds. R. Atkinson. c1991, 49p

Included in Jnl. of Physical and Chemical Reference Data, v20 n3 p459-507 May/Jun 91. Available from American Chemical Society, 1155 16th St., NW, Washington, DC 20036-9976.

#### PB92-110238

(Order as PB92-110212) National Inst. of Standards and Technology, Gaithersburg, MD.

Thermodynamic Properties of the NaBr + H2O System.

D. G. Archer. c1991, 47p Included in Jnl. of Physical and Chemical Reference Data, v20 n3 p509-555 May/Jun 91. Available from American Chemical Society, 1155 16th St., NW, Washington, DC 20036-9976.

#### PB92-110246

(Order as PB92-110212) Joint Inst. for Lab. Astrophysics, Boulder, CO. Cross Sections and Swarm Coefficients for Nitro-

Cross Sections and Swarm Coefficients for Nitrogen Ions and Neutrals In N2 and Argon Ions and Neutrals In N2 and Argon Ions and Neutrals In Ar for Energies from 0.1 eV 10 keV.

A. V. Phelps. c1991, 17p
Included in Jnl. of Physical and Chemical Reference Data, v20 n3 p557-573 May/Jun 91. Available from American Chemical Society, 1155 16th St., NW, Washington DC 20036-9976 ington, DC 20036-9976.

#### PB92-110253

(Order as PB92-110212) National Inst. of Standards and Technology (NML), Gaithersburg, MD. Thermophysics Div. Evaluation of Solubility Data of the System CO-H2O from 273 K to the Critical Point of Water.

H2O from 2/3 K to the critical Foliation Reference R. Crovetto. c1991, 15p Included in Jnl. of Physical and Chemical Reference Data, v20 n3 p575-589 May/Jun 91. Available from American Chemical Society, 1155 16th St., NW, Wash-

ington, DC 20036-9976.

PC A03/MF A01 PB92-116326 National Inst. of Standards and Technology (CSTL), Boulder, CO. Chemical Engineering Div. Transient Hydrogen Heat Transfer. Final Report for April 1986-April 1989. B. Louie, and W. G. Steward. Oct 91, 42p NISTIR-

Contract WPAFB MIPR FY1455-89-N0604 See also PB90-254764. Prepared in cooperation with FluidTherm Engineering, Boulder, CO.

Not available NTIS PB92-116508 National Inst. of Standards and Technology (NML),

Boulder, CO. Thermophysics Div. Hydrogen Component Fugacity Coefficients In Binary Mixtures with Etane: Pressure Dependence. Final rept.

T. J. Bruno, J. A. Schroeder, and S. L. Outcalt. 1990,

See also PB89-124853. Sponsored by Gas Research Inst., Chicago, IL.

in International Jnl. of Thermophysics 11, n5 p889-896 1990.

Not available NTIS PB92-116524 National Inst. of Standards and Technology (CSTL), Boulder, CO. Chemical Engineering Div.

Thermodynamics of the Divalent-Metal Fluorides.
4. Heat Capacity of MSnF4, M = Pb, Ba, or Sr, at Temperatures from 300 K to 660 K. Final rept.

J. E. Callanan, and R. D. Weir. 1991, 10p

See also PB91-149864. Sponsored by Department of National Defence, Ottawa (Ontario). Pub. in Jnl. of Chemical Thermodynamics 23, p411-420 1991.

PB92-116649 Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Molecular Physics Div.

Rotational-Tunneling Spectrum of the Ar-SO2 van der Waals Complex.

Final rept.

L. H. Coudert, K. Matsumura, and F. J. Lovas. 1991, 15p

Pub. in Jnl. of Molecular Spectroscopy 147, p46-60 1991.

PB92-116839 Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Thermophysics Div. Apparatus for Acoustic Measurements of Gases

with Applications for High Temperatures.

Final rept.

K. A. Gillis, and M. R. Moldover. 1991, 8p Contracts DE-Al05-88ER13823, N0002490MP33493 Sponsored by Department of Energy, Washington, DC., and Department of the Navy, Washington, DC. Pub. in Proceedings of Symposium on Energy Engineering Sciences Fluid and Dynamical Systems (9th), Argonne, IL., May 13-15, 1991, p310-317.

PB92-116854 Not available NTIS National Inst. of Standards and Technology (CSTL), Gaithersburg, MD. Biotechnology Div.

Thermodynamics of the Disproportionation of Adenosine 5'-diphosphate to Adenosine 5'-triphosphate and Adenosine 5'-monophosphate. 1. Equilibrium Model.

Final rept.

R. N. Goldberg, and Y. B. Tewari, 1991, 21p Pub. in Biophysical Chemistry 40, p241-261 1991.

PB92-117035 Not available NTIS National Inst. of Standards and Technology (MSEL), Gaithersburg, MD. Ceramics Div.

Surface X-ray Absorption Spectroscopy, EXAFS and NEXAFS, for the in situ and Ex situ Study of Electrodes.

Final rept.

G. G. Long, and J. Kruger. 1991, 43p

Sponsored by National Science Foundation, Washington, DC., and Air Force Office of Scientific Research, Bolling AFB, DC.

Pub. in Techniques for Characterization of Electrodes and Electrochemical Processes, Chapter 4, p167-209

PB92-117050 Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Thermophysics Div. Semiclassical Calculation of Self-Broadening In O2, N2, and CO Raman Spectra. Final rept.

J. P. Looney, and G. J. Rosasco, 1991, 12p Sponsored by Army Research Office, Research Trian-

gle Park, NC. Pub. in Jnl. of Chemical Physics 95, n4 p2379-2390, 15 Aug 91.

PB92-117092 Not available NTIS National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Semiconductor Electronics Div. XANES of Transition Metal Zinc-Blende Semiconductors. Final rept.

D. A. McKeown. 1991, 3p

Pub. in X-ray Absorption Fine Structure, Chapter 85, p346-348 1991.

PB92-117175 Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Molecular Physics Div.

High-Resolution Infrared Spectrum of the nu1 Band of OC10.

Final rept. Fillaniest. J. Ortigoso, R. Escribano, J. B. Burkholder, C. J. Howard, and W. J. Lafferty. 1991, 25p Pub. in Jnl. of Molecular Spectroscopy 148, p346-370

PB92-117290 Not available NTIS National Inst. of Standards and Technology (MSEL),

Gaithersburg, MD. Metallurgy Div.
Laser Vaporlzation Mass Spectrometry of Refractory Materials: Graphite and YBa2Cu3Ox.

Final rept. P. K. Schenck, D. W. Bonnell, and J. W. Hastie.

1989, 5p Pub. in Jnl. of Vacuum Science and Technology A 7,

n3 p1745-1749 1989.

PB92-123157 PC A04/MF A01

National Inst. of Standards and Technology, Gaithersburg, MD. NIST X-Ray Photoelectron Spectroscopy (XPS)

Database. Technical note (Final).

C. D. Wagner. Oct 91, 62p NIST/TN-1289
Also available from Supt. of Docs. as SN003-003-03104-6. Prepared in cooperation with Surfex Co., Oakland, CA.

PB92-148063 Not available NTIS American Chemical Society, Washington, DC.
Journal of Physical and Chemical Reference Data,
Volume 20, Number 4, July/August 1991. Bimonthly rept.

Bimonthly fept.
D. R. Lide. c1991, 168p
See also PB92-148071 through PB92-148105 and PB92-110212. Prepared in cooperation with American Inst. of Physics, New York. Sponsored by National Inst. of Standards and Technology, Gaithersburg, MD. Available from American Chemical Society, 115 16th St., NW, Washington, DC. 20036-9976.

#### PB92-148071

(Order as PB92-148063) National Inst. of Standards and Technology (NML), Gaithersburg, MD. Chemical Kinetics Div. Chemical Kinetic Data Base for Propellant, Com-bustion. 1. Reactions involving NO, NO2, HNO,

HNO2, HCN and N2O.

W. Tsang, and J. T. Herron. c1991, 55p Included in Jnl. of Physical and Chemical Reference Data, v20 n4 p609-663 Jul/Aug 91. Available from American Chemical Society, 1155 16th St., NW, Washington, DC. 20036-9976.

#### PB92-148089

(Order as PB92-148063)

Technion - Israel Inst. of Tech., Haifa.

Ab-Initlo Calculations and Ideal Gas Thermodynamic Functions of Cyclopentadiene and Cyclopentadlene Derivatives. M. Karni, I. Oref, and A. Burcat. c1991, 19p

Included in Jnl. of Physical and Chemical Reference Data, v20 n4 p665-683 Jul/Aug 91. Available from American Chemical Society, 1155 16th St., NW, Washington, DC. 20036-9976.

#### PB92-148097

(Order as PB92-148063)

R and D Associates, Los Angeles, CA.
Improved Fits for the Vibrational and Rotational Constants of Many States of Nitrogen and Oxygen.
R. R. Laher, and F. R. Gilmore. c1991, 28p
Contract DNA-001-88-C-0046
Sponsored by Defense Nuclear Agency, Washington, DC.

Included in Jnl. of Physical and Chemical Reference Data, v20 n4 p685-712 Jul/Aug 91. Available from American Chemical Society, 1155 16th St., NW, Washington, DC. 20036-9976.

#### PB92-148105

(Order as PB92-148063)

Leeds Univ. (England).
Solubilities of Soilds and Liquids of Low Voiatility In Supercritical Carbon Dioxide.

K. D. Bartle, A. A. Clifford, S. A. Jafar, and G. F. Shilstone. c1991, 42p Included in Jnl. of Physical and Chemical Reference Data, v20 n4 p713-756 Jul/Aug 91. Available from American Chemical Society, 1155 16th St., NW, Washington DC 20026 0025 ington, DC, 20036-9976.

PB92-148113 Not available NTIS American Chemical Society, Washington, DC.
Journal of Physical and Chemical Reference Data, Volume 20, Number 5, September/October 1991. Bimonthly rept.

D. R. Lide. c1991, 289p

D. H. Lide. C1991, 289p See also PB92-148121 through PB92-148154 and PB92-148063. Prepared in cooperation with American Inst. of Physics, New York. Sponsored by National Inst. of Standards and Technology, Gaithersburg, MD. Available from American Chemical Society, 1155 16th St., NW, Washington, DC. 20036-9976.

#### PB92-148121

(Order as PB92-148113) National Inst. of Standards and Technology, Gaithers-

burg, MD. Wavelengths and Energy Level Classifications for the Spectra of Aluminum (Al I through Al XIII).

V. Kaufman, and W. C. Martin. c1991, 82p Included in Jnl. of Physical and Chemical Reference Data, v20 n5 p775-858 Sep/Oct 91. Available from American Chemical Society, 1155 16th St., NW, Washington, DC. 20036-9976.

#### PB92-148139

(Order as PB92-148113) National Inst. of Standards and Technology (PL), Gaithersburg, MD. Atomic Physics Div.

Energy Levels of Krypton, Kr I through Kr XXXVI.
J. Sugar, and A. Musgrove. c1991, 57p
Sponsored by Department of Energy, Washington, DC.

Office of Magnetic Fusion Energy.
Included in Jnl. of Physical and Chemical Reference
Data, v20 n5 p859-915 Sep/Oct 91. Available from American Chemical Society, 1155 16th St., NW, Washington, DC. 20036-9976.

### PB92-148147

(Order as PB92-148113)

Idaho Univ., Moscow. Thermodynamic Properties of Oxygen from the Triple Point to 300 K with Pressures to 80 MPa. R. B. Stewart, R. T. Jacobsen, and W. Wagner. c1991, 105p

Prepared in cooperation with Ruhr Univ., Bochum (Germany, F.R.). Inst. fuer Thermo- und Fluiddynamik. Included in Jnl. of Physical and Chemical Reference Data, v20 n5 p917-1021 Sep/Oct 91. Available from American Chemical Society, 1155 16th St., NW, Washington, DC. 20036-9976.

### PB92-148154

(Order as PB92-148113) Keio Univ., Yokohama (Japan). Dept. of Mechanical Engineering.
Sixteen Thousand Evaluated Experimental Ther-

Sixteen Thousand Evaluated Experimental Thermodynamic Property Data for Water and Steam.

I. Sato, K. Watanabe, J. M. H. L. Sengers, J. S. Gallagher, and P. G. Hill. c1991, 22p
Prepared in cooperation with National Inst. of Standards and Technology (NML), Gaithersburg, MD. Thermophysics Div., British Columbia Univ., Vancouver. Dept. of Mechanical Engineering, Technische Univ. Muenchen (Germany, F.R.), and Ruhr Univ., Bochum (Germany, F.R.). Inst. fuer Thermo- und Fluiddynamik. Included in Jnl. of Physical and Chemical Reference Data, v20 n5 p1023-1044 Sep/Oct 91. Available from American Chemical Society, 1155 16th St., NW, Washington, DC. 20036-9976.

Not available NTIS

American Chemical Society, Washington, DC.
Journal of Physical and Chemical Reference Data, Volume 20, Number 6, November/December 1991. Bimonthly rept.

D. L. Lide. c1991, 346p See also PB92-148170 through PB92-148220 and PB92-148113. Errata sheet inserted. Prepared in co-operation with American Inst. of Physics, New York. Sponsored by National Inst. of Standards and Tech-

nology, Gaithersburg, MD. Available from American Chemical Society, 1155 16th St., NW, Washington, DC. 20036-9976.

#### PB92-148170

(Order as PB92-148162) Ruhr Univ., Bochum (Germany, F.R.). Inst. fuer Thermo- und Fluiddynamik.

New Equation of State and Tables of Thermody-

namic Properties for Methane Covering the Range from the Melting Line to 625 K at Pressures up to

U. Setzmann, and W. Wagner. c1991, 95p Included in Jnl. of Physical and Chemical Reference Data, v20 n6 p1061-1155 Nov/Dec 91. Available from American Chemical Society, 1155 16th St., NW, Washigton, DC 20036-9976.

#### PB92-148188

(Order as PB92-148162) National Aeronautics and Space Administration, Cleveland, OH, Lewis Research Center.

Thermodynamic Properties of the Aqueous Sulfu-

ric Acid System to 350 K. F. J. Zeleznik. c1991, 44p

Included in Jnl. of Physical and Chemical Reference Data, v20 n6 p1157-1200 Nov/Dec 91. Available from American Chemical Society, 1155 16th St., NW, Washington, DC, 20036-9976.

#### PB92-148196

(Order as PB92-148162) Alberta Univ., Edmonton. Dept of Chemical Engineer-

Solubility of Carbon Dioxide in Water at Low Pressure.

J. J. Carrol, J. D. Slupsky, and A. E. Mather. c1991,

9p Included in Jnl. of Physical and Chemical Reference Data, v20 n6 p1201-1209 Nov/Dec 91. Available from American Chemical Society, 1155 16th St., NW, Washington, DC. 20036-9976.

#### PB92-148204

(Order as PB92-148162)

Aerospace Corp., Los Angeles, CA.
Chemical Kinetic Data Sheets for High-Temperature Reactions. Part 2. c1991, 100p

Included in JnI. of Physical and Chemical Reference Data, v20 n6 p1211-1311 Nov/Dec 91. Available from American Chemical Society, 1155 16th St., NW, Washington, DC. 20036-9976.

#### PB92-148212

(Order as PB92-148162) Curtin Univ. of Technology, Bentley (Australia).

Atomic Welghts of the Elements 1989. J. R. De Laeter, and K. G. Heumann. c1991, 13p Prepared in cooperation with Regensburg Univ. (Germany, F.R.).

Included in Jnl. of Physical and Chemical Reference Data, v20 n6 p1313-1325 Nov/Dec 91. Available from American Chemical Society, 1155 16th St., NW, Washington, DC. 20036-9976.

#### PB92-148220

(Order as PB92-148162) Curtin Univ. of Technology, Bentley (Australia).

#### **CHEMISTRY**

### Physical & Theoretical Chemistry

isotopic Compositions of the Elements 1989. J. R. De Laeter, K. G. Heumann, and K. J. R. Rosman. c1991, 11p

Prepared in cooperation with Regensburg Univ. (Germany, F.R.).

Included in Jnl. of Physical and Chemical Reference Data, v20 n6 p1327-1337 Nov/Dec 91. Available from American Chemical Society, 1155 16th St., NW, Washington, DC. 20036-9976.

#### **Polymer Chemistry**

PB91-144402 PC A05/MF A01 National Inst. of Standards and Technology (NML), Boulder, CO. Chemical Engineering Science Div. Thermal Conductivity of a Polymide Film between 4.2 and 300 K, with and without Aiumina Particles as Filler.

D. L. Rule, D. R. Smith, and L. L. Sparks. Aug 90, 77p NISTIR-3948

Sponsored by Ship Structure Committee, Washington, DC.

PB91-147231 Not available NTIS National Bureau of Standards (IMSE), Gaithersburg, MD. Polymers Div.

incorporation of Molecular Orientation into Systems of Lameliar Morphology. 1. Effects of Packing Entropy on the Lameliar Thickness of Block Copolymers.

Final rept.

E. A. DiMarzio. 1988, 8p Pub. in Macromolecules 21, n7 p2262-2269 Jul 88.

PB91-148890 Not available NTIS National Inst. of Standards and Technology (MSEL), Gaithersburg, MD. Polymers Div. Chain Conformation of a Biock Polymer in a Micro-

phase-Separated Structure. Final rept.

Y. Matsushita, K. Mori, Y. Mogi, R. Saguchi, I. Noda, M. Nagasawa, T. Chang, C. Glinka, and C. Han. 1990, 5p Pub. in Macromolecules 23, n19 p4317-4321, 17 Sep

PB91-158626 Not available NTIS National Bureau of Standards (IMSE), Gaithersburg, MD. Polymers Div.

Measurement of Space Charge Fields in Polymers.

A. S. DeReggi, M. G. Broadhurst, G. T. Davis, and F. I. Mopsik. 1987, 6p Pub. in Proceedings of Annual Report Conference on

Electrical Insulation and Dielectric Phenomena, Gaithersburg, MD., October 18-22, 1987, p307-312.

PB91-159095 Not available NTIS National Inst. of Standards and Technology (NML), Boulder, CO. Chemical Engineering Science Div. Electrokinetic Demixing of Two-Phase Aqueous Polymer Systems. 1. Separation Rates of Polyethylene Glycol-Dextran Mixtures. Final rept.

K. S. M. S. Raghava Rao, R. M. Stewart, and P. Todd. 1990, 12p

Pub. in Separation Science and Technology 25, n9-10 p985-996 1990.

PB91-159715 PC A07/MF A01 National Inst. of Standards and Technology (MSEL), Gaithersburg, MD. Polymers Div. Polymers: Technical Activities 1990. L. E. Smith, and B. M. Fanconi. Jan 91, 134p NISTIR-4396 See also PB86-165024.

PB91-162099 Not available NTIS National Inst. of Standards and Technology (MSEL), Gaithersburg, MD. Polymers Div.

Spinodal Decomposition in a Hydrogen-Bonded Polymer Biend.

Final rept.
M. He, Y. Liu, Y. Feng, M. Jiang, and C. C. Han.

Pub. in Macromolecules 24, n2 p464-473 1991.

PB91-162131 Not available NTIS National Inst. of Standards and Technology (MSEL), Gaithersburg, MD. Polymers Div. Time-Resolved Small-Angle Neutron Scattering in intermediate- and Late-Stage Spinodal Decomposition of (DPB/HPi) Blends.

Final rept. H. Jinnai, H. Hasegawa, T. Hashirnoto, and C. C.

Han. 1991, 8p Pub. in Macromolecules 24, nl p282-289 1991.

PB91-162255 Not available NTIS National Bureau of Standards (NML), Gaithersburg, MD. Inorganic Analytical Research Div. High Purity Fluoropolymer Materials: Trace Element Content and Leaching. Final rept.

J. R. Moody, E. S. Beary, D. S. Bushee, and P. J.

Paulsen. 1988, 6p Pub. in Jnl. of Crystal Growth 89, p43-48 1988.

PB91-174482 Not available NTIS National Bureau of Standards (IMSE), Gaithersburg, MD. Polymers Div. Fluorescence Monitoring of Polymer Processing: Mixing and Zero Shear Viscosity.

Final rept.
A. Bur, F. Wang, and R. Lowry. 1988, 4p
Pub. in Proceedings of Society of Plastics Engineers
ANTEC '88, Atlanta, GA., April 18-22, 1988, p1107-1110.

PB91-174508 Not available NTIS National Inst. of Standards and Technology (NML), Boulder, CO. Chemical Engineering Science Div. Statistical Mechanical Model of Aqueous Two-Phase Systems. Final rept.

H. Cabezas, J. D. Evans, and D. C. Szlag. 1989, 10p Pub. in Fluid Phase Equilibria 53, p453-462 1989.

PB91-187153 Not available NTIS PB91-18/153
National Inst. of Standards and Technology (IMSE), Gaithersburg, MD. Polymers Div.
Small-Angle Neutron Scattering Studies of Compatible Blends of Linear Poly(Vinyl Methyl Ether) and Cross-Linked Deuterated Polystyrene.

Final rept. B. J. Bauer, R. M. Briber, and C. C. Han. 1989, 9p Pub. in Macromolecules 22, n2 p940-948 Feb 89.

PR91-187229 Not available NTIS Notice and Inst. of Standards and Technology (NEL), Gaithersburg, MD. Fire Measurement and Research

Molecular Dynamics Study of the Depolymerization Reaction in Simple Polymers.

E. Blaisten-Barojas, and M. R. Nyden. 1990, 7p Sponsored by National Science Foundation, Washington, DC.

Pub. in Chemical Physics Letters 171, n5-6 p499-505, 17 Aug 90.

PB91-187385 Not available NTIS National Inst. of Standards and Technology (IMSE), Gaithersburg, MD. Polymers Div.

Phenomenological Theory of the influence of Strain History on the Rate of isothermal Stress Relaxation.

Final rept.

B. D. Coleman, and L. J. Zapas. 1989, 16p Pub. in Jnl. of Rheology 33, n3 p501-516 1989.

PB91-187427 Not available NTIS National Inst. of Standards and Technology (MSEL), Gaithersburg, MD. Polymers Div.
Multistep Stress-Relaxation Study of a Single
Crystal of n-Eicosane (C20H42) in Torsion.

Final rept.

J. M. Crissman. 1989, 7p Pub. in Jnl. of Applied Physics 66, n1 p169-175, 1 Jul

PB91-187450 Not available NTIS National Inst. of Standards and Technology (IMSE), Gaithersburg, MD. Polymers Div.
Statistics of a Polymer Molecule in the Presence of Asymmetric Obstacles.

Final rept. E. A. Di Marzio. 1991, 10p

Pub. in Macromolecules 24, n7 p1595-1604 1991.

PB91-194456 PC A03/MF A01 National Inst. of Standards and Technology (MSEL), Gaithersburg, MD. Polymers Div. Synthesis of Non-Ionic Water-Dispersible Resins for Use in Intaglio Inks Curing by Electron Beam

Radiation. Annual rept.

B. Dickens, B. J. Bauer, and W. J. Pummer. May 91, 27p NISTIR-4564 Sponsored by Bureau of Engraving and Printing, Washington, DC.

PB91-194688 Not available NTIS National Inst. of Standards and Technology (MSEL), Gaithersburg, MD. Polymers Div.
Small-Angle Neutron Scattering of Blends of Cross-Linked and Linear Polystyrene. Final rept.

R. M. Briber, and B. J. Bauer. 1991, 6p Pub. in Macromolecules 24, n8 p1899-1904, 15 Apr

PB91-195099 Not available NTIS National Bureau of Standards (IMSE), Gaithersburg, MD. Polymers Div. Relaxation of Crosslinked Networks: Theoretical

Models and Apparent Power Law Behavior. Final rept. G. B. McKenna, and R. J. Gaylord. 1988, 6p Pub. in Polymer 29, n11 p2027-2032 Nov 88.

PB91-195107 Not available NTIS National Inst. of Standards and Technology (IMSE),

Gaithersburg, MD. Polymers Div.
Study of the Linear Viscoelastic Properties of
Cyclic Polystyrenes Using Creep and Recovery Measurements.

Final rept. G. B. McKenna, B. J. Hostetter, N. Hadjichristidis, L. J. Fetters, and D. J. Plazek. 1989, 19p Pub. in Macromolecules 22, n4 p1834-1852 Apr 89.

PB91-195271 Not available NTIS National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Fire Measurement and Research Div.

Molecular Dynamics of Initial Events in the Thermai Degradation of Polymers.

Final rept. M. Nyden, and D. W. Noid. 1991, 6p

Pub. in Jnl. of Physical Chemistry 95, n2 p940-945 1991.

### **Polymer Chemistry**

PB91-195685 Not available NTIS National Inst. of Standards and Technology (IMSE), Gaithersburg, MD. Polymers Div. Difunctional and Multifunctional Monomers Capa-

ble of Cyclopolymerization.

Final rept.

J. W. Stansbury. 1991, 7p Sponsored by National Inst. of Dental Research, Bethesda, MD.

Pub. in Macromolecules 24, n8 p2029-2035 1991.

PB91-202887 Not available NTIS National Inst. of Standards and Technology (IMSE), Gaithersburg, MD. Polymers Div.

Examination of Mechanisms Responsible for incoherent Scattering of Subthermal Neutrons by Polymers.

Final rept.

L. D. Coyne, and W. L. Wu. 1989, 3p Pub. in Polymer Communications 30, n10 p312-314 1989.

Not available NTIS PB91-203224 National Inst. of Standards and Technology (MSEL),

Gaithersburg, MD. Polymers Div.

Morphology of Polymer Films and Single Molecules.

Final rept.

B. Howell, and D. H. Reneker. 1990, 20p

Pub. in Jnl. of Applied Polymer Science 40, n9-10 p1663-1682 1990.

PB91-203364 Not available NTIS National Inst. of Standards and Technology (MSEL),

Gaithersburg, MD. Polymers Div.
Simulation Studies of Excluded Volume Effects on Polymer Chain Dynamics in Several Nonlattice

Models. Final rept.

D. Kranbuehl, D. Eichinger, and P. H. Verdier, 1991.

9p Pub. in Macromolecules 24, n9 p2419-2427 1991.

PB91-203570 Not available NTIS National Inst. of Standards and Technology (IMSE), Gaithersburg, MD. Polymers Div.

Tests of the Flory-Rehner Hypothesis: Comparison of the Elastic Free Energy Function for Cross-linked Rubber in the Dry and Swollen States.

Final rept. G. B. McKenna, K. M. Flynn, and Y. Chen. 1989, 5p Pub. in Molecular Basis of Polymer Networks, p127-

PB91-203711 Not available NTIS National Bureau of Standards (NEL), Gaithersburg, MD. Building Materials Div.

Reflection/Absorption FTIR Spectral Characteristics of Thin and Thick Crosslinked Epoxy Films on Steel Substrates.

Final rept. Final rept.
T. Nguyen, D. Bentz, and W. Byrd. 1988, 5p
Pub. in Proceedings of ACS Division of Polymeric Materials Science and Engineering, Los Angeles, CA.,
September 26-30, 1988, v59 p459-463.

PC A07/MF A02 PB91-222612 Mational Inst. of Standards and Technology (MSEL),
Gaithersburg, MD. Polymers Div.
Assessment of the State-of-the-Art for Process
Monitoring Sensors for Polymer Composites. D. Hunston, W. McDonough, B. Fanconi, F. Mopsik, F. Wang, F. Phelan, and M. Chang. 1 Jun 91, 145p NISTIR-4514

PB91-236638 Not available NTIS

National Inst. of Standards and Technology (MSEL), Gaithersburg, MD. Polymers Div.

Semiempirical Theory of Relaxation: Concentrated Polymer Solution Dynamics. Final rept.

J. F. Douglas, and J. B. Hubbard, 1991, 15p Pub. in Macromolecules 24, n11 p3163-3177, 27 May

PB91-236653 Not available NTIS National Inst. of Standards and Technology (NML), Boulder, CO. Chemical Engineering Science Div. Thin and Composite High-Flux Membranes of Perfluorosulfonated Ion-Exchange Polymer. Final rept.

B. K. Dutta, D. Randolph, and S. K. Sikdar. 1990,

Pub. in Jnl. of Membrane Science 54, p51-61 1990.

PB91-236786 Not available NTIS National Inst. of Standards and Technology (CSTL), Gaithersburg, MD. Process Measurements Div. Small-Angle Neutron Scattering and Light Scatter-ing Studies on the Miscibility of Protonated Polylsoprene/Deuterated Polybutadiene Blends. Final rept.

H. Hasegawa, S. Sakurai, M. Takenaka, T. Hashimoto, and C. C. Han. 1991, 7p Pub. in Macromolecules 24, n8 p1813-1819 1991.

PB91-237842 Not available NTIS National Inst. of Standards and Technology (IMSE), Gaithersburg, MD. Polymers Div. Network Structure in Epoxles. 6. The Growth Proc-

ess Investigated by Neutron Scattering. Final rept. W. L. Wu, W. Su, and B. J. Bauer. 1989, 5p See also PB88-195094.

Pub. in Polymer 30, n8 p1384-1388 1989.

PR92-110196

(Order as PB92-110162) Tennessee Univ., Knoxville. Dept. of Chemistry. Heat Capacity and Other Thermodynamic Properties of Linear Macromolecules. 10. Update of the

ATHAS 1980 Data Bank.
M. Varma-Nair, and B. Wunderlich. c1991, 56p Prepared in cooperation with Oak Ridge National Lab., TN. Chemistry Div.

Included in Jnl. of Physical and Chemical Reference Data, v20 n2 p349-404 Mar/Apr 91. Available from American Chemical Society, 1155 16th St., NW, Washington, DC. 20036-9976.

PC A07/MF A02 PB92-116284 National Inst. of Standards and Technology (MSEL), Gaithersburg, MD.

Polymers: Technical Activities 1991. (NAS-NRC Assessment Panel, February 13-14, 1992). L. E. Smith, and B. M. Fanconi. Oct 91, 131p

NISTIR-4696 See also PB91-159715.

Not available NTIS PB92-116698 National Inst. of Standards and Technology (MSEL), Gaithersburg, MD. Polymers Div.

Flexible Polymer with Excluded Volume at an Inter-acting Penetrable Surface of Variable Dimension: A Multiple epsilon Perturbation Theory. Final rept.

J. F. Douglas, and M. K. Kosmas. 1989, 8p Pub. in Macromolecules 22, n5 p2412-2419 May 89.

Not available NTIS PB92-117266 National Inst. of Standards and Technology (MSEL), Gaithersburg, MD. Polymers Div.

Microstructure Effects on the Lower Critical Solution Temperature Phase Behavior of Deuterated Polybutadiene and Protonated Polylsoprene Blends Studied by Small-Angle Neutron Scatter-Ing.

Final rept.

S. Sakurai, H. Jinnai, H. Hasegawa, T. Hashimoto, and C. C. Han, 1991, 5p

Pub. in Macromolecules 24, n17 p4839-4843 1991.

Not available NTIS PB92-117274 National Inst. of Standards and Technology (MSEL), Gaithersburg, MD. Polymers Div.

Small-Angle Neutron Scattering and Light Scattering Study on the Miscibility of Poly(styrene-ran-butadlene)/Polybutadiene Blends.

Final rept. S. Sakurai, T. Izumitani, H. Hasegawa, T. Hashimoto, and C. Han. 1991, 8p

See also PB91-236786.

Pub. in Macromolecules 24, n17 p4844-4851 1991.

#### General

PC A04/MF A01 PB92-112499 National Inst. of Standards and Technology (CSTL), Gaithersburg, MD.

NIST Calibration Services for Humidity Measurement.

A. Wexler, R. W. Hyland, S. Hasegawa, and P. H. Huang. Oct 91, 65p NISTIR-4677 See also PB270 049.

# CIVIL ENGINEERING

### Construction Equipment, Materials, & **Supplies**

PB91-134189 Not available NTIS National Bureau of Standards (NEL), Gaithersburg, MD. Building Materials Div.

Techniques to Observe the Fracture Zone In Mortar and Concrete.

Final rept.

L. I. Knab, H. Jennings, H. N. Walker, J. R. Clifton, and J. W. Grimes. 1986, 7p

Pub. in Fracture Toughness and Fracture Energy of Concrete, p241-247 1986.

PB91-143321 PC A04/MF A01 National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Center for Building Technology. Outline of a National Plan on High-Performance Concrete: Report on the NIST/ACI Workshop. Held In Galthersburg, MD on May 16-18, 1990. N. J. Carino, and J. R. Clifton. Dec 90, 63p NISTIR-4465

PB91-148072 Not available NTIS National Bureau of Standards (NEL), Gaithersburg, MD. Building Materials Div.

#### CIVIL ENGINEERING

### Construction Equipment, Materials, & Supplies

Microstructure and Fracture at the Cement Paste-Aggregate interface. Final rept.

L. Struble. 1988, 10p

Sponsored by Air Force Office of Scientific Research, Bolling AFB, DC. Pub. in Materials Research Society Symposium Pro-

ceedings, v114 p11-20 1988.

PB91-148528 PC A03/MF A01 National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Center for Building Technology.
Guide to the Use of the Cement and Concrete Research Remote Bulletin Board System (RBBS) Computer.

L. J. Kaetzel, and J. R. Clifton. Dec 90, 49p NISTIR-

4473

Not available NTIS PB91-149922 National Bureau of Standards (NEL), Gaithersburg, MD. Building Materials Div.
Pozzolan Programs of the Cement and Concrete

Reference Laboratory. Final rept.

J. H. Pielert, and R. M. Kolos. 1987, 13p See also PB80-160047. Sponsored by American Society for Testing and Materials, Philadelphia, PA. Pub. in Proceedings of the International Ash Utilization Symposium (8th), p19-1-19-13 1987.

PB91-174524 Not available NTIS National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Structures Div. introduction to ACi 306.1-87: Specification for Cold Weather Concreting. Final rept. N. J. Carino. 1988, 8p

Pub. in Concrete International 10, p50-57 Oct 88.

Not available NTIS National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Structures Div. Rate Constant Functions for Strength Development of Concrete. R. C. Tank, and N. J. Carino. 1991, 10p Pub. in ACI Materials Jnl. 88, n1 p74-83 Jan/Feb 91.

PC A03/MF A01 PB91-178863 National Inst. of Standards and Technology (BFRL), Gaithersburg, MD.

Characterization of Field Concrete. P. E. Stutzman. Jan 91, 35p NISTIR-4516

Not available NTIS National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Building Materials Div. Percolation of Phases in a Three-Dimensional Cement Paste Microstructurai Modei.

Final rept. D. P. Bentz, and E. J. Garboczi. 1991, 20p Sponsored by National Science Foundation, Washington, DC.

Pub. in Cement and Concrete Research 21, p325-344 1991.

Not available NTIS PB91-189621 National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Building Materials Div.

Evaluation of Test Methods for Measuring the Bond Strength of Portland Cement-Based Repair Materiais to Concrete. Final rept.

L. I. Knab, and C. Spring. 1989, 12p See also PB88-215488. Sponsored by Tri-Service Building Materials Committee, Washington, DC. Pub. in Cement, Concrete and Aggregates 11, n1 p3PB91-203836 Not available NTIS National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Building Materials Div.

Activities of the Construction Materials Reference Laboratories Related to Laboratory Accreditation. Final rept.

J. H. Pielert. 1989, 7p

Sponsored by American Association of State Highway and Transportation Officials, Washington, DC. Pub. in Accreditation Practices for Inspections, Tests, and Laboratories, ASTM STP 1057, p30-36 1989.

PB91-240804 PC A03/MF A01 National Inst. of Standards and Technology (BFRL), Gaithersburg, MD.

Guidelines for the Development of Computer

Based Models in a Cementitious Materials Modeling Laboratory. L. J. Kaetzel, J. R. Clifton, and L. J. Struble. Aug 91, 35p NISTIR-4650

Prepared in cooperation with Illinois Univ. at Urbana-Champaign. Dept. of Civil Engineering.

PB92-116300 PC A03/MF A01 National Inst. of Standards and Technology (BFRL), Gaithersburg, MD. Uniaxiai Tensile Tests to Measure the Bond of In situ Concrete Overiays.
R. G. Mathey, and L. I. Knab. Oct 91, 37p NISTIR-4648

See also PB90-204520. Sponsored by U.S. Army Corps of Engineers, Washington, DC, Naval Facilities Engineering Command, Alexandria, VA, Air Force Engineering and Services, AFB, Washington, DC.

**Highway Engineering** 

PB91-187849 PC A04/MF A01 National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Center for Building Technology.

Proposed Design Criteria for Shallow Bridge Foundations.

F. Y. Yokel. Feb 90, 57p NISTIR-90/4248 Sponsored by Federal Highway Administration, McLean, VA. Office of Research, Development, and Technology.

> COMBUSTION. **ENGINES.** & **PROPELLANTS**

Combustion & Ignition

Not available NTIS PB91-134510 National Bureau of Standards (NEL), Gaithersburg, MD. Fire Measurement and Research Div. Aspects of Smoidering Combustion.

T. J. Ohlemiller. 1987, 9p
Pub. in Proceedings of International Conference on the Physical and Chemical Processes Occurring in a Burning Cigarette, Winston-Salem, NC., April 26-29, 1987, p346-354.

PB91-144428 PC A04/MF A01 National Inst. of Standards and Technology (NML), Boulder, CO. Chemical Engineering Science Div. ignition Characteristics of the Nickel-Based Alloy UNS N07001 in Pressurized Oxygen.

J. W. Bransford, and P. A. Billiard. Sep 90, 53p

NISTIR-3947

Prepared in cooperation with Boeing Co., Seattle, WA. Sponsored by National Aeronautics and Space Administration, Huntsville, AL. George C. Marshall Space Flight Center.

Not available NTIS PR91-147280 National Bureau of Standards (NML), Gaithersburg, MD. Chemical Kinetics Div. Mechanism of Soot Formation in Acetylene-Oxvaen Mixtures.

Final rept. M. Frenklach, D. W. Clary, W. C. Gardiner, S. E. Stein, and T. Yuan. 1986, 37p
Pub. in Combustion Science and Technology 50, n1-3

p79-115 1986.

PB91-147306 Not available NTIS National Bureau of Standards (NEL), Gaithersburg, MD. Fire Science and Engineering Div.

Radiant Heat Fluxes from 100-200 MW Natural Gas/Air Diffusion Fiames. Final rept.

J. P. Gore, G. M. Faeth, D. Evans, and D. B.

Pfenning, 1987, 4p
Pub. in Proceedings of Fall Technical Meeting Chemical and Physical Processes in Combustion, San Juan, PR., December 15-17, 1986, p21.1-21.4 1987.

PB91-147934 Not available NTIS National Bureau of Standards (NEL), Gaithersburg, MD. Chemical Process Metrology Div. Veiocity and Dropiet Size Measurments in a Fuei Spray. Final rept.

C. Presser, A. K. Gupta, R. J. Santoro, and H. G. Semerjian. 1986, 11p Sponsored by Department of Energy, Washington, DC. Pub. in Proceedings of AIAA Aerospace Sciences Meeting (24th), Reno, NV., January 6-9, 1986, p1-11.

Not available NTIS PB91-148056 National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Fire Measurement and Research Div. Signai Detection Efficiency in Multiphoton Ioniza-

tion Fiame Measurements. Final rept.

K. C. Smyth, and P. J. H. Tjossem. 1990, 8p Pub. in Applied Optics 29, n33 p4891-4898, 20 Nov 90.

PB91-149013 Not available NTIS National Bureau of Standards (NEL), Gaithersburg, MD. Thermophysics Div. Laser Diagnostics for Characterization of Fuei

Final rept.

C. Presser, A. K. Gupta, R. J. Santoro, and H. G. Semerjian. 1987, 8p

Sponsored by Department of Energy, Washington, DC. Pub. in Proceedings of International Congress on Applications of Lasers and Electro-Optics (5th), ICALEO '86, Arlington, VA., November 10-13, 1986, p160-167 1987.

PB91-157180 PC A12/MF A02 California Inst. of Tech., Pasadena. Guggenheim Jet Propulsion Center.
Species Produced in Fires Burning in Two-Layered

and Homogeneous Vitiated Environments.

Rept. for 1 Aug 89-31 Jul 90. J. H. Morehart, E. E. Zukoski, and T. Kubota. Dec 90, 275p NIST/GCR-90/585 Grant NANB900958

Sponsored by National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Center for Fire Re-

### Combustion & Ignition

PB91-157206 PC A07/MF A01 California Univ., Berkeley. Dept. of Mechanical Engineering

Fire Propagation in Concurrent Flows.

Final progress rept. 1 Aug 89-31 Jul 90. A. C. Fernandez-Pello. Dec 90, 133p NIST/GCR-90/ 586

Grant NANB7D0737

See also PB90-151754. Sponsored by National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Center for Fire Research.

Not available NTIS Not available NTIS
National Bureau of Standards (NEL), Boulder, CO.
Chemical Engineering Science Div.
Ignition Characteristics of Selected SSME Alloys.
Final rept. PB91-174474

J. W. Bransford, P. A. Billiard, J. A. Hurley, and I.

Vasquez. 1986, 21p Contract H43201B

Sponsored by National Aeronautics and Space Administration, Huntsville, AL. George C. Marshall Space

Flight Center.
Pub. in Proceedings of NASA Conference on Advanced Earth-to-Orbit Propulsion Technology, Huntsville, AL., May 13-15, 1986, p366-386.

PB91-174797 Not available NTIS National Bureau of Standards (NEL), Gaithersburg, MD. Center for Fire Research.

Letter to the Editor, Fire Technology, Comments on T.Z. Harmathy Viewpoint, May 1985.

Final rept.
D. Gross. 1985, 3p
Pub. in Fire Technology 21, n4 p324-326 Nov 85.

PB91-175331 Not available NTIS National Bureau of Standards (NEL), Gaithersburg, MD. Fire Safety Technology Div. Surface Flame Spread.

J. G. Quintiere. 1988, 8p Pub. in SFPE (Society of Fire Protection Engineers) Handbook of Fire Protection Engineering, Chapter 24, p360-367 1988.

PC A03/MF A01 PB91-178830 National Inst. of Standards and Technology (BFRL), Gaithersburg, MD.
FIREDOC Users Manual, 2nd Edition.
N. H. Jason. Mar 91, 36p NISTIR-4526
See also PB90-271800.

PB91-203794 Not available NTIS National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Fire Measurement and Research Div.

Kinetic Properties of the Components of Douglas-Fir and the Heat of Combustion of Their Volatile Pyrolysis Products. Final rept.

W. J. Parker, and S. L. LeVan. 1989, 17p

Pub. in Wood and Fiber Science 21, n3 p289-305

Not available NTIS PB91-203851 National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Fire Measurement and Research Div.

Wind Effects on Fires.

Final rept. W. M. Pitts. 1991, 52p

Sponsored by Defense Nuclear Agency, Washington,

Pub. in Progress in Energy and Combustion Science 17, p83-134 1991.

Not available NTIS PB91-203869 National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Chemical Process Metrology Div.

Effect of Atomization Air on Droplet Dynamics of Spray Flames. Final rept.

C. Presser, A. K. Gupta, and H. G. Semerjian. 1988,

Sponsored by Department of Energy, Washington, DC. Pub. in Proceedings of Fall Technical Meeting on Chemical and Physical Processes in Combustion, Clearwater Beach, FL., December 5-7, 1988, p105-1-

PB91-216804 PC A03/MF A01 National Inst. of Standards and Technology (BFRL), Gaithersburg, MD.

Interaction of an Isolated Sprinkler Spray and a

Two-Layer Compartment Fire Environment.
L. Y. Cooper. May 91, 49p NISTIR-4587
Sponsored by American Architectural Mfrs. Association, Des Plaines, IL.

PR91-216838 PC A99/MF F08 National Inst. of Standards and Technology (CSTL),

Rational Inst. of Standards and Technology (CCT2), Gaithersburg, MD. ICLASS-91 Proceedings of the International Con-ference on Liquid Atomization and Spray Systems (5th). Held in Gaithersburg, MD. on July 15-18, 1991.

Special pub. (Final). H. G. Semerijan. Jul 91, 874p NIST/SP-813 Also available from Supt. of Docs. as SN003-003-03086-4.

Not available NTIS PB91-237024 National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Fire Measurement and Research

Div. Partial Equilibrium in Laminar Hydrocarbon Diffusion Flames.

Final rept.

Pub. in Chemical Physics Process Combustion, p16/1-

Not available NTIS PB91-237099 Notional Inst. of Standards and Technology (BFRL), Gaithersburg, MD. Fire Measurement and Research

Laser-induced Fluorescence of CH. In a Laminar CH4/Air Diffusion Flame: implications for Diagnostic Measurements and Analysis of Chemical Rates.

T. S. Norton, and K. C. Smyth. 1991, 20p Pub. in Combustion Science and Technology 76, p1-

PB91-237412 Not available NTIS National Bureau of Standards (NEL), Gaithersburg, National Bureau of Standards (NEL), Gaithersburg, MD. Fire Science and Engineering Div. Experimental Study of the Pyrolysis Rate of a Poly(methyl methacrylate) (PMMA) Wall Panel in a Reduced-Scale Enclosure.

K. D. Steckler, and H. E. Mitler. 1988, 4p Pub. in Chem. Phys. Processes Combust., p73/1-73/4

PC A11/MF A03 PB92-112432 Michigan State Univ., East Lansing. Dept. of Mechani-

cal Engineering.
Theoretical Investigation of Piloted Ignition of

**Wood.** L. S. Tzeng, and A. Atreya. Aug 91, 230p NIST/ GCR-91-595

Grant NANB8D0861 Sponsored by National Inst. of Standards and Technology (BFRL), Gaithersburg, MD.

PC A04/MF A01 National Inst. of Standards and Technology (BFRL), Gaithersburg, MD.

Data for Fire Hazard Assessment of Selected Non-Halogenated and Halogenated Fire Retardants; Report of Test FR 3983.

R. H. Harris, V. Babrauskas, B. C. Levin, and M.

Paabo. Oct 91, 56p NISTIR-4649

Sponsored by Huber (J.M.) Corp., Norcross, GA. Solem Div., and Aluminum Co. of America, Alcoa Center, PA. Alcoa Technical Center.

PB92-117191 Not available NTIS National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Fire Measurement and Research

Large-Scale Turbulent Structures and the Stabilization of Lifted Turbulent Jet Diffusion Flames. Final rept.

W. M. Pitts. 1990, 8p

Pub. in Proceedings of International Symposium on Combustion/The Combustion Institute (23rd), Orleans, France, July 22-27, 1990, p661-668.

PB92-117365 Not available NTIS National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Fire Measurement and Research

Relative H-Atom and O-Atom Concentration Measurement in a Laminar, Methane/Air Diffusion

Final rept.

K. C. Smyth, and P. J. H. Tjossem. 1990, 9p Pub. in Proceedings of Symposium on Combustion/

The Combustion Institute (23rd), France, July 22-27, 1990, p1829-1837.

### **Fuel & Propellant Tanks**

Not available NTIS PB91-175570 National Inst. of Standards and Technology, Boulder, CO. Chemical Engineering Science Div.

Reusable Cryogenic Foam Insulation for Advanced Aerospace Vehicles.

Final rept.

P. S. McAuliffe, A. H. Taylor, L. L. Sparks, and W. P. Dube, 1991, 12p

Pub. in Proceedings of AIAA Aerospace Sciences Meeting (29th), Reno, NV., January 7-10, 1991, p1-12.

### Reciprocation & Rotating Combustion **Engines**

PB91-189498 Not available NTIS National Inst. of Standards and Technology (IMSE), Gaithersburg, MD. Ceramics Div. Ceramic Wear Maps.

Final rept.

S. M. Hsu, D. S. Lim, and R. G. Munro, 1988, 10p Pub. in Proceedings of the International Symposium on Ceramic Materials and Components for Engines (3rd), Las Vegas, NV., November 27-30, 1988, p1236-1245.

# COMMUNICATION

#### Common Carrier & Satellite

FIPS PUB 159 PC **E07** National Inst. of Standards and Technology (CSL),

Gaithersburg, MD.

Detail Specification for 62.5-mum Core Diameter/

125-mum Cladding Diameter Class la Multimode, Graded-Index Optical Waveguide Fibers. Federal information processing standards (Final). S. M. Radack, and A. G. Hanson. 27 Dec 90, 24p Also pub. as American National Standards Inst., New York rept. no. ANSI/EIA/TIA-492AAAA-1989. Prepared in cooperation with American National Standards Inst., New York, and National Communications System, Arlington, VA.

Three ring vinyl binder also available: North American Continent price \$7.00; all others write for quote.

PB91-134825 Not available NTIS National Inst. of Standards and Technology (NCSL), Gaithersburg, MD. Systems and Network Architecture Div.

Performance of OSi Transport over ACCUNET and IBERPAC.

Final rept.

E. Vazquez, R. Colella, J. Vinyes, J. Fox, and J.

Serrocal. 1988, 10p Sponsored by Universidad Politecnica de Madrid (Spain). Escuela Tecnica Superior de Ingenieros de Telecomunicacion.

Pub. in Proceedings of Annual Joint Conference IEEE (Institute of Electrical and Electronics Engineers) Computer and Communications Societies - IEEE INFO-COM (7th), New Orleans, LA., March 27-31, 1988,

PB91-148734 Not available NTIS
National Inst. of Standards and Technology (NEL),
Boulder, CO. Electromagnetic Fields Div.
Quasi-Static Analysis of a Two-Wire Transmission
Line Located at an interfere.

Line Located at an interface.

Final rept. D. A. Hill. 1990, 6p

Pub. in Radio Science 25, n4 p435-440 Jul/Aug 90.

Not available NTIS PB91-158584 National Bureau of Standards (NEL), Gaithersburg, MD. Building Equipment Div.

Toward Modular Semantic Application Layer Pro-

tocols (MS-ALPs): Communication between Heterogeneous Information Systems Using Artificial Inteiligence (Ai) Programming Techniques.

Final rept. W. F. Danner. 1986, 10p

Pub. in Proceedings of Annual Technical Symposium (25th) Distributed Information Systems: Emerging Uses and Technology, Gaithersburg, MD., June 12, 1986, p63-72.

PB91-175018 Not available NTIS National Bureau of Standards (ICST), Gaithersburg, MD. Systems and Network Architecture Div. Application of Formal Description Techniques to the Specification of Distributed Test Systems.

R. J. Linn, and J. P. Favreau. 1988, 14p Pub. in Proceedings of IEEE INFOCOM Conference on Computer Communications, New Orleans, LA., March 27-31, 1988, p96-109.

PB91-187682

(Order as PB91-187617, PC A06/MF A01) National Inst. of Standards and Technology, Boulder, CO.

Limited International intercomparison of Responsivity Scales at Fiber Optic Wavelengths.

R. L. Gallawa, J. L. Gardner, D. H. Nettleton, K. D. Stock, T. H. Ward, and X. Li. 1991, 6p

Prepared in cooperation with National Measurement Lab., Lindfield (Australia), National Physical Lab., Teddington (England), and Physikalisch-Technische Bundesanstalt, Brunswick (Germany, F.R.).

Included in Jnl. of Research of the National Institute of Standards and Technology, v96 n2 p225-245 Mar/Apr

PB91-187724 PC A03/MF A01 National Inst. of Standards and Technology (CSL), Gaithersburg, MD.

Validation of an OSI Transport Class 4 Simulator. O. Kim, S. Heatley, and B. Bishop. May 91, 36p NISTIR-4530

PB91-187831 PC A05/MF A01 National Inst. of Standards and Technology (CSL), Gaithersburg, MD. Issues in Transparent File Access.

Special pub. (Final).

K. Olsen, and J. Barkley. Apr 91, 90p NIST/SP-500/

Also available from Supt. of Docs. as SN003-003-03079-1.

Not available NTIS PB91-203091 National Inst. of Standards and Technology (NEL), Boulder, CO. Electromagnetic Technology Div.

Frequency Stabilization of an Erblum-Doped Fiber Laser: A Potential Wavelength Standard for Optical Communications.

Final rept.

S. L. Gilbert. 1991, 1p

Pub. in Proceedings of Optical Fiber Communication Conference, San Diego, CA., February 18-22, 1991, p85.

PC A03/MF A01 PB91-216622 National Inst. of Standards and Technology (CSL), Gaithersburg, MD.

Electronic Data Interchange in Message Handling Systems.

P. Markovitz. Jun 91, 39p NISTIR-4608

Sponsored by Internal Revenue Service, Washington,

PC A05/MF A01 PB92-102201 National Inst. of Standards and Technology (NCSL), Gaithersburg, MD. Advanced Systems Div.

ISDN Conformance Testing: Layer 1. Physical Layer. Part 1. Basic Rate S/T Interface, User Side. Special pub. (Final).

S. A. Wakid, and K. M. Roberts. Sep 91, 91p NIST/ SP-500/194

Also available from Supt. of Docs. as SN003-003-03109-7.

PB92-102219 PC A08/MF A02 National Inst. of Standards and Technology (CSL), Gaithersburg, MD. Advanced Systems Div.

North American ISDN Users' Forum Agreements on Integrated Services Digital Network. Special pub. (Final).

S. A. Wakid, and K. M. Roberts. Sep 91, 152p NIST/ SP-500/195

Also available from Supt. of Docs. as SN003-003-03110-1. See also PB91-171967, PB91-197004, PB92-112200 and PB92-102201.

### Graphics

PB91-187773 PC A03/MF A01 National Inst. of Standards and Technology (NCTL), Gaithersburg, MD. Office Systems Engineering Group. Government Document Processing Requirements Report.

R. F. Sies. Apr 91, 16p NISTIR-4560

#### Policies, Regulations, & Studies

N91-25760/0

(Order as N91-25755/0, PC A99/MF A04) National Inst. of Standards and Technology (NML), Boulder, CO. Time and Frequency Div.

Trapped-ion Frequency Standards.
D. J. Wineland, W. M. Itano, J. C. Bergquist, J. J. Bollinger, and D. J. Heinzen. May 90, 8p
Pub. in Proceedings of Annual Precise Time and Time

Interval (PTTI) Applications and Planning Meeting (22nd) p53-60 (See N91-25755 17-70). Sponsored by AFOSR and Onr.

N91-25766/7

(Order as N91-25755/0, PC A99/MF A04) National Inst. of Standards and Technology, Boulder,

GPS Time Transfer with implementation of Selec-

tive Availability.
D. W. Allan, M. P. Granveaud, W. J. Klepczynski, and W. W. Lewandowski. May 90, 11p
Pub. in Proceedings of Annual Precise Time and Time

Interval (PTTI) Applications and Planning Meeting (22nd) p145-155.

PB91-134593 Not available NTIS National Bureau of Standards (NML), Boulder, CO. Time and Frequency Div. Israel's New Synchronized Time Scale, UTC(INPL).

Final rept.

A. Shenhar, W. Litman, A. Lepek, A. Citrinovitch, and D. W. Allan. 1988, 5p Pub. in Proceedings of Annual Symposium on Frequency Control 1988 (42nd), Baltimore, MD., June 1-3, 1988, p485-489.

PB91-162388 Not available NTIS National Inst. of Standards and Technology (NML), Boulder, CO. Time and Frequency Div. Calculated from the Frequency Domain: An Update.

F. L. Walls, J. Gary, A. O'Gallagher, L. Sweet, and R.

Sweet. 1990, 8p Pub. in Proceedings of the European Frequency and Time Forum (4th), Neuchatel, Switzerland, March 13-

15, 1990, p197-204.

PB91-192989 PC A06/MF A02 National Inst. of Standards and Technology, Gaithers-

National Inst. of Standards and Technology, Gaithersburg, MD. Office of Standards Services.

Conformity Assessment Workshop on Electromagnetic Compatibility.

B. G. Simson. Jun 91, 111p NISTIR-4611

See also PB91-192997. Sponsored by American Society of Mechanical Engineers, Washington, DC., and American Council of Independent Labs., Washington,

PB91-200790 Not available NTIS National Inst. of Standards and Technology (NML), Boulder, CO. Time and Frequency Div.

### Policies, Regulations, & Studies

New inexpensive Frequency Calibration Service from NIST. Final rept.

D. W. Allan, D. D. Davis, J. Levine, M. A. Weiss, and N. Hironaka. 1990, 10p

Pub. in Proceedings of Annual Symposium on Frequency Ccontrol (44th), Baltimore, MD., May 23-25, 1990, p107-116.

PB91-200808 Not available NTIS Notional Inst. of Standards and Technology (NML), Boulder, CO. Time and Frequency Div. Rubidium Frequency Standard and a GPS Receiver. A Remotely Steered Clock System with Good Short-Term and Long-Term Stability.

Final rept.

D. W. Allan, and J. Levine. 1990, 10p Pub. in Proceedings of Annual Symposium on Fre-quency Control, Baltimore, MD., May 23-25, 1990, p151-160.

PB91-202937 Not available NTIS National Inst. of Standards and Technology (NML), Boulder, CO. Time and Frequency Div.

Frequency and Time Stability of GPS and GLON-ASS Clocks. Final rept.

P. Daly, I. D. Kitching, D. W. Allan, and T. K. Peppler.

Pub. in Proceedings of Annual Symposium on Frequency Control (44th), Baltimore, MD., May 23-25, 1990, p127-139.

PB91-203174 Not available NTIS National Bureau of Standards (NML), Gaithersburg, MD.

Advances in Science, Emerging Technologies and Global Competition: Opportunities and Challenge. Final rept.

Pub. in Proceedings European Frequency and Time Forum (2nd), Neuchatel, Switzerland, March 16-18, 1988, p13-21 1988.

Not available NTIS PB91-203182 National Bureau of Standards, Gaithersburg, MD. Office of the Associate Director for Programs, Budget and Finance.

Established Microwave Frequency Standards.

Final rept.

H. Hellwig. 1989, 2p Pub. in Frequency Standards and Metrology, p44-45 1989.

PB91-231605 PC A03/MF A01 National Inst. of Standards and Technology (NML), Boulder, CO. Time and Frequency Div.

NIST Time and Frequency Services. Special pub. (Final). R. E. Beehler, and M. A. Lombardi. Jun 91, 32p

NIST/SP-432 Also available from Supt. of Docs.

PB91-236950 Not available NTIS National Inst. of Standards and Technology (PL), Boulder, CO. Time and Frequency Div.

Precise Ephemerides for GPS Time Transfer.

Final rept.

W. Lewandowski, and M. A. Weiss. 1988, 11p Pub. in Proceedings of Annual Precise Time and Time Interval (PTTI) Applications and Planning Meeting (21st), Redondo Beach, CA., November 28-30, 1990, p95-105 1988.

PC A03/MF A01 PR92-123132 National Inst. of Standards and Technology, Boulder,

Time Domain Frequency Stability Calculated from the Frequency Domain Description: Use of the SIGINT Software Package to Calculate Time Domain Frequency Stability from the Frequency Domain.

F. L. Walls, J. Gary, A. O'Gallagher, R. Sweet, and L. Sweet. Sep 91, 39p NISTIR-89/3916-REV

Supersedes PB90-257684.

### Radio & Television Equipment

Not available NTIS National Inst. of Standards and Technology (NML), Boulder, CO. Time and Frequency Div.

Extending the Range and Accuracy of Phase Noise Measurements.

Final rept.

F. L. Walls, A. J. D. Clements, C. M. Felton, M. A. Lombardi, and M. D. Vanek. 1988, 10p Pub. in Proceedings of Symposium on Frequency Control (42nd), Baltimore, MD., June 1-3, 1988, p432-441.

PB91-134882 Not available NTIS National Inst. of Standards and Technology (NML), Boulder, CO. Time and Frequency Div. Accuracy Model for Phase Noise Measurements.

Final rept. F. L. Walls, C. M. Felton, A. J. D. Clements, and T.

D. Martin. 1989, 16p

Pub. in Proceedings of Annual Precise Time and Time Interval (PTTI) Applications and Planning Meeting (21st), Redondo Beach, CA., November 28-30, 1989,

PB91-162040 Not available NTIS National Inst. of Standards and Technology (NEL), Boulder, CO. Electromagnetic Fields Div.

Evaluation of Dual-Port Circularly Polarized Probes for Planar Near-Field Measurements.

Final rept. M. H. Francis, and K. MacReynolds. 1990, 6p Pub. in Proceedings of Annual Meeting and Symposium on Antenna Measurement Techniques Association (12th), Philadelphia, PA., October 7-16, 1990, p13-3-

Not available NTIS PB91-162156 National Inst. of Standards and Technology (NEL), Boulder, CO. Electromagnetic Fields Div. Microstrip Patch Antenna as a Standard Transmitting and Receiving Antenna.

Final rept. M. Kanda, 1989, 3p See also PB90-206038.

Pub. in Proceedings of International Symposium on Electromagnetic Compatibility, Nagoya, Japan, September 8-10, 1989, p460-462.

#### Verbal

13-8

PR91-189910 Not available NTIS National Inst. of Standards and Technology (NCSL), Gaithersburg, MD. Advanced Systems Div. Phone-Mediated Word Alignment for Speech Rec-

ognition Evaluation. Final rept.

J. Picone, G. R. Doddington, and D. S. Pallett. 1990,

Pub. in IEEE (Institute of Electrical and Electronics Engineers) Transactions on Acoustics, Speech and Signal Processing 38, n3 p559-562 Mar 90.

Not available NTIS PB91-195396 National Bureau of Standards (ICST), Gaithersburg, MD. Advanced Systems Div.

Scoring Continuous Speech in the DARPA Speech Recognition Program: Part 2.

Final rept.

D. S. Pallett. 1988, 5p

Pub. in Proceedings of AVIOS '88 Voice I/O System Applications Conference, San Francisco, CA., October 4-6, 1988, p1-5.

PB91-505370 CD-ROM\$1200.00 National Inst. of Standards and Technology (CSL), Gaithersburg, MD. Automated Speech Recognition Group.

DARPA Air Travel Information System (ATISO) Speaker-Dependent Training Data (on CD-ROM).

Data file.

Nov 90, CD-ROM NIST/DF/VD-91/003 Microsoft Extension version 2.1. User instructions on disc 'readme.doc'. See also PB91-505362, PB91-505364, PB90-501776, PB89-256666, PB90-500547, PB91-505065, PB91-506592, and PB90-500539.

The datafile is on four, 4.72 inch discs.

PB91-509802 CD-ROM\$500.00 National Inst. of Standards and Technology (CSL), Gaithersburg, MD. Automated Speech Recognition Group.

Road Rally Conversational Speech Corpora (on CD-ROM).

Data file.

Sep 91, CD-ROM NIST/DF/VD-91/015

System: Sun Microsystems 3/180; OS 4.1 operating system. Microsoft Extension Version 2.1. No color requirement or hard disk required. 'Readme.doc' on Disc. Software is written in 'C' Source Code. See also PB89-226666, PB90-501776, PB90-500539, PB91-505362, PB91-505354, PB90-500547, PB91-505065 and PR91-506592

The datafile is on one, 4.72 inch disc. Data format: ISO

# COMPUTERS, CONTROL & INFORMATION THEORY

### Computer Hardware

N91-25793/1

(Order as N91-25755/0, PC A99/MF A04) National Inst. of Standards and Technology (NML), Boulder, CO. Time and Frequency Div.

Synchronizing Computer Clocks Using a Local Area Network

J. Levine. May 90, 9p

Pub. in Proceedings of Annual Precise Time and Time Interval (PTTI) Applications and Planning Meeting (22nd) p409-417 (See N91-25755 17-70).

Not available NTIS PB91-147652 National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Mathematical Analysis Div. Closure and Precision in Level-Index Arithmetic. Final rept.

D. W. Lozier, and F. W. J. Olver. 1990, 10p Pub. in SIAM (Society for Industrial and Applied Mathematics) Jnl. of Numerical Analysis 27, n5 p1295-1304 Oct 90

### **COMPUTERS. CONTROL & INFORMATION THEORY**

### Computer Hardware

PB91-147660 Not available NTIS National Inst. of Standards and Technology (ICST), Waithora in Section (Section 2) (1997), Gaithersburg, MD. Advanced Systems Div. Workloads, Observables, Benchmarks and Instru-

mentation. Final rept.

G. Lyon, and R. D. Snelick. 1990, 12p See also PB90-207770.

Pub. in Proceedings of Joint International Conference on Vector and Parallel Processing, Zurich, Switzerland, September 10-13, 1990, p86-97.

PB91-158766 Not available NTIS Mational Bureau of Standards (ICST), Gaithersburg, MD. Systems and Software Technology Div. 1987: The Year of the 386.

Final rept.

A. L. Hankinson. 1988, 2p

Pub. in IEEE (Institute of Electrical and Electronics Engineers) Spectrum 25, n1 p32-33 Jan 88.

PB91-158899 Not available NTIS
National Inst. of Standards and Technology (NEL),
Gaithersburg, MD. Factory Automation Systems Div.
Choosing a Name for Your Computer.
Final rept. Final rept.

D. Libes. 1990, 8p

Pub. as Choosing a Name for Your Computer, p1-8 Aug 90.

Not available NTIS PB91-159319 National Inst. of Standards and Technology (ICST), Gaithersburg, MD. Advanced Systems Div. Hardware Instrumentation Approach for Performance Measurement of a Shared-Memory Multiprocessor. Final rept.

G. Nacht, and A. Mink. 1989, 16p See also PB89-186852. Sponsored by Defense Advanced Research Projects Agency, Arlington, VA. Pub. in Proceedings of International Conference on Modeling Techniques and Tools for Computer Performance Evaluation (4th), Palma, Spain, September 14-16, 1988, p249-264 1989.

Not available NTIS PB91-189894 National Inst. of Standards and Technology (NCSL), Gaithersburg, MD. Advanced Systems Div. Conformance Tester for X.25 DTE Implementa-

Final rept.

H. Peng, D. H. Su, and S. A. Wakid. 1989, 4p Pub. in IEEE (Institute of Electrical and Electronics Engineers) Network Magazine 3, n4 p27-30, 39, Jul 89.

PB91-201822 PC A05/MF A01 National Inst. of Standards and Technology (NCSL), Gaithersburg, MD.

National Computer Systems Laboratory Annual Report, 1990.

E. Lennon, S. Radack, and R. Roach. Dec 90, 76p NISTIR-4492

Also available from Supt. of Docs.

PC A04/MF A01 PB92-108950 National Inst. of Standards and Technology (EEEL), Gaithersburg, MD. Electricity Div.

Video Processing with the Princeton Engine at

Technical note (Final).
B. F. Field, and C. Fenimore. Aug 91, 54p NIST/TN-

Also available from Supt. of Docs. as SN003-003-03091-1.

PC A05/MF A01 PB92-116409 National Inst. of Standards and Technology (NCSL), Gaithersburg, MD. Advanced Systems Div.

Test Methods for Optical Disk Medla Characteristics (for 356 mm Ruggedized Magneto-optic Media).

Special pub.

F. L. Podio. Sep 91, 79p NIST/SP-500/191

Also available from Supt. of Docs. as SN003-003-03103-8. Sponsored by National Aeronautics and Space Administration, Hampton, VA. Langley Research Center.

PB92-123124 PC A05/MF A01 National Inst. of Standards and Technology (CSL), Gaithersburg, MD. Advanced Systems Div. Monitoring and Reporting Techniques for Error

Rate and Error Distribution in Optical Disk Sys-

Final rept.

F. L. Podio. Oct 91, 92p NIST/SP-500/198 Also available from Supt. of Docs. as SN003-003-03125-9. Proceedings of a workshop held in Colorado Springs, Colorado on August 5, 1991.

Computer Software

AD-A233 961/2 PC A04/MF A01 National Inst. of Standards and Technology, Gaithersburg, MD.

Ada Compiler Validation Summary Report. Certificate Number: 901109S1.11053, Digital Equipment Corporation VAX Ada, Version 2.2 VAX 8800 => VAX 8800.

Final rept.

12 Dec 90, 59p Rept no. AVF-NIST90DEC505-1-1.11

AD-A234 083/4 PC A05/MF A01 National Inst. of Standards and Technology, Gaithersburg, MD.

Ada Compiler Validation Summary Report: DDC International A/S, DACS VAX/VMS to 80186 Bare Ada Cross Compiler System, Version 4.6, VAX 8530 (Host) to Bare Board iSBC 186/93A (Host), 901129\$1.11079.

Final rept.

30 Nov 90, 98p Rept no. NIST-90DDC500-8-1.11

PC A06/MF A01 AD-A234 118/8 National Inst. of Standards and Technology, Gaithersburg, MD.

Ada Compiler Validation Summary Report: Certificate Number: 901129S1.11112 DDC International A/S DACS 80386 DMS/OS Ada Compller System, Version 4.6 IBM PS/2 Model 80-311 = > IBM PS/2 Model 80-311.

Final rept.

30 Nov 90, 117p Rept no. NIST90DDC500-9-1.11

PC A04/MF A01 AD-A234 323/4 National Inst. of Standards and Technology, Gaithersburg, MD.

Ada Compiler Validation Summary Report: Certificate Number: 901129S1.11050 DDC International A/S DACS VAX/VMS Native Ada Compller System, Version 4.6 VAX 8530 => VAX 8530.

30 Nov 90, 53p

PC A04/MF A01 AD-A234 350/7 National Inst. of Standards and Technology, Gaithersburg, MD.

Ada Compiler Validation Summary Report: Digital Equipment Corporation, VAX Ada, Version 2.2, BAX 8800 (Host) t VAX MicroVAX II Running VAXELN Version 4.1 (Target), 901109S1.11054. Final rept

12 Dec 90, 59p Rept no. NIST-90DEC505-2-1.11

PC A03/MF A01 AD-A234 380/4 National Inst. of Standards and Technology, Gaithersburg, MD.

Ada Compller Validation Summary Report: Certificate Number: 901129S1.11051, DDC International A/S, DACS VAX/VMS to 68020 Bare Cross Compiler System, Version 4.6 MicroVAX 3100 Greater Than or Equal to Motorola MVME133. Final rept. 17 Dec 90-1 Mar 91. 1 Mar 91, 45p

AD-A234 438/0 PC A06/MF A01 National Inst. of Standards and Technology, Gaithersburg, MD.

Ada Compiler Validation Summary Report: Certificate Number: 901129S1.11077 DDC International A/S DACS VAX/VMS to 80186 Bare Ada Cross Compiler System with Rate Monotonic Scheduling, Version 4.6 VAX 8530 => Bare Board iSBC/03A. Final rept. 30 Nov 90, 101p

PC A04/MF A01 AD-A234 439/8 National Inst. of Standards and Technology, Gaithers-

Durg, MD.
Ada Compiler Valldation Summary Report: Certificate Number: 901129S1.11075 DDC International A/S DACS 80386 UNIX V Ada Compiler System, Version 4.6 ICL DRS300 = > ICL DRS300. Final rept.

30 Nov 90, 72p

AD-A234 529/6 PC A06/MF A01 National Inst. of Standards and Technology, Gaithersburg, MD.

Ada Compiler Validation Summary Report: Certificate Number: 901129S1.11074 DDC International A/S DACS VAX/VMS 60 80386 PM Bare Ada Cross Compiler System, Version 4.6 VAX 8530 => Bare Board iSBC 386/21.

Final rept. 30 Nov 90, 101p

PC A06/MF A02 AD-A239 715/6
National Inst. of Standards and Technology (NCSL),
October 2018 MD Software Standards Validation Gaithersburg, MD. Software Standards

Group.
Ada Compiler Validation Summary Report. Certificate Number: 910510S1.11161 UNISYS Corporation, UCS Ada, Version 1R1, 2200/600 (Host and Target). Revision.

Final rept. 24 Jul 91, 123p

Revision of report dated 9 Apr-10 May 91.

AD-A240 511/6 PC A05/MF A01 National Inst. of Standards and Technology, Gaithersburg, MD.

Ada Compiler Validation Summary Report: Certifi-cate Number: 910626S1.11179 U.S. Navy Ada/M, Version 4.0 (OPTIMIZE) VAX 11/785 => AN/AYK-14 (Bare Board).

Final rept. 30 Jul 91, 89p

PC A04/MF A01 AD-A240 512/4 National Inst. of Standards and Technology, Gaithersburg, MD.

### COMPUTERS, CONTROL & INFORMATION THEORY

### **Computer Software**

Ada Compiler Validation Summary Report: Certificate Number 910705S1.11192 InterAct Corporation InterAct Ada Mips Cross-Compiler System, Release 2.0 MicroVAX 3100 Cluster = > Lockheed Sanders STAR MVP R3000/R3010 board (Bare Machine).

Final rept. 31 Jul 91, 63p

AD-A240 610/6 PC A03/MF A01 National Inst. of Standards and Technology, Gaithersburg, MD.

Ada Complier Validation Summary Report: Certifi-cate Number: 91050251.11158 DDC International A/S, DACS VAX/VMS to 80860 Bare Ada Cross Complier System, Version 4.6.1, VAX 8530 (Host) to Tadpole Technology PLC TP860M (Bare Board) (Target). Final rept.

24 Jul 91, 36p

AD-A240 611/4 PC A05/MF A01 National Inst. of Standards and Technology, Gaithers-

burg, MD.

Ada Complier Validation Summary Report: Certificate Number: 910626S1.11176 U.S. Navy, Ada/L, Version 4.0 (/Optimize), VAX 11/785 (Host) to AN/ UYJ-43 (Single CPU) (Bare Board) (Target). Final rept.

30 Jul 91, 79p

PC A05/MF A01 AD-A240 612/2 PC A05/MF A01 National Inst. of Standards and Technology, Gaithersburg, MD.

Ada Compiler Validation Summary Report: Certificate Number: 910626S1.11174 U.S. Navy, Ada/M, Version 4.0 (/Optimize), VAX 8550, Running VAX/ VMS Version 5.3 (Host) to AN/UYK-44 (EMR) (Bare Board) (Target).

Final rept. 30 Jul 91, 89p

AD-A240 613/0 PC A05/MF A01 National Inst. of Standards and Technology, Gaithers-

burg, MD.

Ada Compller Validation Summary Report: Certificate Number: 910626S1.11175 U.S. Navy Ada/M, Version 4.0 (/Optimize), VAX 8550 (Host) to AN/ AYK-14 (Bare Board) (Target).

Final rept. 30 Jul 91, 87p

AD-A240 762/5 PC A04/MF A01 National Inst. of Standards and Technology, Gaithersburg, MD.

Ada Compller Validation Summary Report. Certificate Number: 910705S1.11191, InterACT Corporation interACT Ada 1750A Compiler System, Release 3.5, MicroVAX 3100 Cluster => InterACT MIL-STD-1750A Instruction Set Architecture Simulator, Release 2.3 (Bare Machine).

Final rept. 31 Jul 91, 75p

AD-A240 763/3 PC A05/MF A01 National Inst. of Standards and Technology, Gaithers-

burg, MD. Ada Compiler Validation Summary Report. Certificate Number: 910626S1.11178, U.S. Navy Ada/M, Version 4.0 (/OPTIMIZE) VAX 11/785 => AN/ UYK-44 (EMR) (Bare Board).

Final rept. 30 Jul 91, 89p

PC A05/MF A01 AD-A240 783/1 National Inst. of Standards and Technology, Gaithersburg, MD.

Ada Compiler Validation Summary Report: Certificate Number 910626S1.11173 U.S. Navy Ada/L, Version 4.0 (/Optimize) VAX 855 = AN/UYK-43 (EMR) (Bare Board).

Final rept. 30 Jul 91, 80p

AD-A240 784/9 PC A05/MF A01 National Inst. of Standards and Technology, Gaithersburg, MD.

Ada Compiler Validation Summary Report: Certificate Number Number 910626S1.11172 U.S. Navy Ada/L, Version 4.0 (/Optimize) VAX 8550 = AN/ UYK-43 (Single CPU) (Bare Board).

Final rept. 30 Jul 91, 80p

AD-A240 785/6 PC A03/MF A01 National Inst. of Standards and Technology, Gaithersburg, MD.

Ada Compiler Validation Summary Report: Certificate Number: 910502S1.11159 DDC International A/S DACS Sun-3/SunOS to 68030 Bare Ada Cross Compiler System, Version 4.6.4, MRI IEEE 695 (BASIC-MODE) Sun-3/50 = Motorola MVME143 Board (68030/68882).

Final rept. 24 Jul 91, 50p

AD-A240 849/0 PC A03/MF A01 National Inst. of Standards and Technology, Gaithersburg, MD.

Ada Compiler Validation Summary Report. Certifi-cate Number: 910502S1.11160 DDC International A/S DACS Sun-3/SunOS to 68030 Bare Ada Cross Compiler System, Version 4.6.4, MRI IEEE 695 (SECURE MODE) Sun-3/50 => Motoroia MVME143 Board (68030/68882).

Final rept. 24 Jul 91, 50p

AD-A240 850/8 PC A05/MF A01 National Inst. of Standards and Technology, Gaithersburg, MD.

Durg, MD.

Ada Compiler Validation Summary Report. Certificate Number: 910626S1.11177 U.S. NAVY Ada/L,

Version 4.0 (/OPTIMIZE) VAX 11/785 => AN/
UYK-43 (EMR) (Bare Board).

Final rept. 26 Jun 91, 80p

AD-A242 268/1 PC A08/MF A02 National Inst. of Standards and Technology, Gaithersburg, MD.

Ada Compiler Validation Summary Report: Certifi-cate Number: 910517S1.11163 U.S. Navy, AdaVAX, Version 5.0, (/NO OPTIMIZE) VAX 8350 (Host and Target).

Final rept. 17 May 91, 175p

No software available for distribution.

PC A05/MF A01 AD-A242 269/9 National Inst. of Standards and Technology, Gaithers-

Ada Compiler Validation Summary Report: Certifi-cate Number: 910517S1.11162 U.S. Navy, AdaVAX, Version 5.0, (/OPTIMIZE) VAX 8600 (Host and Target).

Final rept.

17 May 91, 76p No software available for distribution.

AD-A242 270/7 PC A04/MF A01 National Inst. of Standards and Technology, Gaithersburg, MD.

Ada Compiler Validation Summary Report: Certiflcate Number: 910517S1.11165 U.S. Navy, AdaVAX, Version 5.0 (/NO-OPTIMIZE), VAX 11/785 (Host and Target).

Final rept.

17 May 91, 72p

No software available for distribution.

AD-A242 273/1 PC A04/MF A01 National Inst. of Standards and Technology, Gaithersbura, MD.

Ada Complier Validation Summary Report: Certifi-cate Number: 910517S1.11164 U.S. Navy, AdaVAX, Version 5.0, (/OPTIMIZE), VAX11/785 (Host and Target).

Final rept. 17 May 91, 72p

No software available for distribution.

AD-A242 609/6 PC A05/MF A01 National Inst. of Standards and Technology, Gaithersburg, MD.

Ada Compiler Validation Summary Report: Certiflcate Number 910918S1.11216, NEC Corporation, NEC Ada Compiler System for EWS-UX/V (Rel 4.0), 2.1(4.6) EWS4800/220 Version Release EWS4800/220.

Final rept.

18 Sep 91, 77p

No software available with this document.

AD-A242 896/9 PC A04/MF A01 National Inst. of Standards and Technology, Gaithersburg, MD.

Ada Compiler Validation Summary Report. Certificate Number: 911025S1.11226, Digital Equipment Corporation DEC Ada, Version 1.0 DEC station 5000 Model 200 => DEC station 5000 Model 200. Final rept.

28 Oct 91, 71p

FIPS PUB 120-1A **PC E09** National Inst. of Standards and Technology (CSL), Gaithersburg, MD.

Graphical Kernei System (GKS). Pascal Binding; Category: Software Standard; Subcategory: Graphics.

Federal information processing standards (Final).

D. R. Benigni. c1991, 179p

Supersedes FIPS PUB 120. See also FIPS PUB 120-1 and FIPS PUB 120-1B. Also pub. as American National Standards Inst., New York rept. no. ANSI-X3.124.2-1988. Prepared in cooperation with American National Standards Inst., New York.

Three ring vinyl binder also available; North American Continent price \$7.00; all others write for quote.

PB91-134536 Not available NTIS National Bureau of Standards (ICST), Gaithersburg, MD. Systems and Software Technology Div. Developing Federal Software Standards: A New Direction.

Final rept.

W. M. Osborne, and A. L. Hankinson. 1986, 2p Pub. in Proceedings of Computer Standards Conference Striking a Balance between Technology, Economics, Politics, and Reality - for Substance, Not Form, San Francisco, CA., May 13-15, 1986, p1-2.

PB91-143289 PC A03/MF A01 National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Robot Systems Div.

### **COMPUTERS, CONTROL & INFORMATION THEORY**

#### Computer Software

Assembly Code to Compute Sine and Cosine Using the Cordic Algorithm. J. A. Horst. Dec 90, 20p NISTIR-4480

PB91-149179 Not available NTIS National Bureau of Standards (ICST), Gaithersburg, MD. Center for Computer Systems Engineering.

UNIX Expert: A Prototype Knowledge-Based Software Development Workstation. Final rept.

S. B. Salazar. 1985, 6p Pub. in Intelligent Systems: Their Development and Application, p103-108 1985.

PB91-149336 Not available NTIS National Bureau of Standards (NEL), Gaithersburg, MD.

Algorithm Design for Large-Scale Computations. Final rept.

F. Sullivan. 1987, 7p Pub. in International Jnl, of Supercomputer Applications 1, n1 p99-105 1987.

PB91-157198 PC A07/MF A01 National Inst. of Standards and Technology (NCSL),

Gaithersburg, MD.

Proceedings of the Object-Oriented Database Task Group Workshop, Tuesday, October 23, 1990, Chateau Laurler Hotel, Ottawa, Canada. E. N. Fong. Jan 91, 150p NISTIR-4488

PB91-159160 Not available NTIS National Bureau of Standards, Gaithersburg, MD. Program Office. Agency Exploits Flexibility of Software in Moving

Info.

Final rept.

A. H. Sher, and P. B. Saunders. 1986, 1p Pub. in Government Computer News 5, n9 p35(2), 9 May 86.

PB91-159723 PC A14/MF A02 National Inst. of Standards and Technology (NCSL),

National Inst. of Standards and Technology (NCSL), Gaithersburg, MD.
Proceedings of the Object-Oriented Database Task Group Workshop, Held In Atlantic City, New Jersey on May 22, 1990.
E. N. Fong, and C. W. Thompson. Feb 91, 308p
NISTIR-4503

See also PB91-157198. Prepared in cooperation with Texas Instruments, Inc., Dallas.

PB91-167387 PC A04/MF A01 National Inst. of Standards and Technology (NCSL),

Gaithersburg, MD.
Functional Benchmarks for Fourth Generation Languages.

Special pub. (Final). M. M. Gray, and G. E. Fisher. Mar 91, 61p NIST/SP-500/184

Also available from Supt. of Docs. as SN003-003-03071-6. See also PB87-210332.

Not available NTIS PB91-174441 National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Applied and Computational Mathe-

DEQSOL and ELLPACK: Problem-Solving Environments for Partial Differential Equations.

Final rept. R. F. Boisvert, and D. K. Kahaner. 1991, 13p Pub. in Office of Naval Research Asian Office Scientific Information Bulletin 16, n1 p7-19 Jan/Mar 91.

Not available NTIS PB91-175455 Mational Bureau of Standards (ICST), Gaithersburg, MD. Information Systems Engineering Div. **Designing Data Entity Naming Conventions.** Final rept.

J. Newton. 1988, 11p

Pub. in Proceedings of International Conference on Entity-Relationship Approach (6th), New York, NY., November 9-11, 1987, p439-449 1988.

PB91-185108 PC A04/MF A01 National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Applied and Computational Mathematics Div.

VolksGrapher: a FORTRAN Plotting Package User's Guide, Version 3.0.

D. K. Kahaner, and W. E. Anderson. Feb 90, 55p NISTIR-90/4238

PB91-187567 PC A04/MF A01 National Inst. of Standards and Technology (CSL), Gaithersburg, MD.

Guide to Design, implementation and Management of Distributed Databases. Special pub.

E. N. Fong, C. L. Sheppard, and K. A. Harvill. Feb 91, 60p NIST/SP-500/185

Also available from Supt. of Docs. as SN003-003-03076-7.

PB91-187716 PC A04/MF A01 National Inst. of Standards and Technology (NCSL), Gaithersburg, MD. Software Standards Validation Gaithersburg, MD. Software Standards Group

Programming Languages and Database Language SQL. Validated Processor List Including GOSiP

Conformance Testing Registers.
J. B. Kailey. Apr 91, 59p NISTIR-4557

PB91-189456 Not available NTIS National Inst. of Standards and Technology (NCSL), Gaithersburg, MD. Systems and Software Technology

Difficulties in Parsing SGML.

Final rept.

J. Heath, and L. Welsch. 1988, 7p Pub. in Proceedings of ACM Conference on Document Processing Systems, Santa Fe, NM., December 5-9, 1988, p71-77.

PB91-201772 PC A03/MF A01 National Inst. of Standards and Technology (NCSL), Gaithersburg, MD. Software Standards Validation Group.

FORTRAN Temporary Program Fixes, FCVS78 Version 2.0, Level 26. 1 Feb 87, 22p See also PB85-226736 and PB82-250903.

PB91-216598 PC A03/MF A01 National Inst. of Standards and Technology (CAML), Gaithersburg, MD. Portable Vectorized Software for Bessel Function Evaluation.

R. F. Boisvert, and B. V. Saunders. Jun 91, 18p

NISTIR-4615

PB91-222588 PC A03/MF A01 National Inst. of Standards and Technology (CSL), Gaithersburg, MD. Advanced Systems Div.

Performance Evaluation of Hypercube Applica-tions: Using a Global Clock and Time Dilation. R. D. Snelick, Jul 91, 27p NISTIR-4630 Sponsored by Defense Advanced Research Projects Agency, Arlington, VA., and Department of Energy, Washington, DC.

PB91-231571 PC A03/MF A01 National Inst. of Standards and Technology (CSL), Gaithersburg, MD. Database and Graphics Group.

Computer Implementation of a Discrete Set Algebra.

L. Gallagher. Jul 91, 31p NISTIR-4637

PB91-236687 Not available NTIS National Inst. of Standards and Technology (CSL), Gaithersburg, MD. Systems and Software Technology

Functional Meta-Structure for Hypertext Models and Systems.

Final rept.

R. Furuta, and P. D. Stotts. 1990, 27p

Pub. in Electronic Publishing 3, n4 p179-205 Nov 90.

PB91-237040 Not available NTIS National Inst. of Standards and Technology (CSL), Gaithersburg, MD. Systems and Software Technology Div.

Book Review: Hypertext Hands-On.

Final rept.

J. Moline. 1990, 2p

Pub. in Electronic Publishing 3, n3 p173-174 Aug 90.

Not available NTIS PB91-237057 National Inst. of Standards and Technology (CSL), Gaithersburg, MD. Systems and Software Technology

Linking Information to Objects: A Hypertext Prototype for Numismatists.

Final rept.

J. Moline. 1991, 17p

Pub. in Visual Resources VII, p361-377 1991.

PB91-237685 Not available NTIS National Inst. of Standards and Technology (CSL), Gaithersburg, MD. Systems and Software Technology Div

Software Verification and Validation: An Overview. Final rept.

D. R. Wallace, and R. U. Fujii. 1989, 8p See also PB90-111691.

Pub. in IEEE (Institute of Electrical and Electronics Engineers) Software 6, n3 p10-17 May 89.

PB91-240754 PC A03/MF A01 National Inst. of Standards and Technology (MEL), Gaithersburg, MD. Robot Systems Div. Depot: A Framework for Sharing Software Installa-tion Across Organizational and Unix Platform

Boundaries. K. L. Manheimer, S. N. Clark, B. A. Warsaw, and W. P. Rowe. Sep 90, 14p NISTIR-4436

Prepared in cooperation with Century Computing, Inc., Laurel, MD.

PB91-507699 **CP T99** MUMPS System Lab., Nagoya (Japan). MUMPS Validation Suite, Version 7.6 (Vax/VMS Backup), 1991.

Software.

Nar 91, mag tape NIST/SW/MT-91/011
System: DEC PDP-11/34; Vax/VMS Version V5.3 operating system. Language: MUMPS. File format: Vax/VMS Backup. Other formats available as PB91-507707 (for Microcomputers), PB91-507715 (ANSI), and PB91-507723 (TAR). Sponsored by National Inst. of Standards and Technology, Gaithersburg, MD. Available in 9-track, ASCII character set, 1600 or 6250

PB91-507707 MUMPS System Lab., Nagoya (Japan).

**CP D99** 

### COMPUTERS, CONTROL & INFORMATION THEORY

### **Computer Software**

MUMPS Validation Suite, Version 7.6, 1991 (for Microcomputers).

Software.

1 Mar 91, 2 diskettes NIST/SW/DK-91/012 System: IBM PC/XT; MS DOS 3.0 or higher operating system. Language: MUMPS. Supersedes PB90-500125. Other formats available as PB91-507699 (Vax/VMS), PB91-507715 (ANSI), and PB91-507723 (TAR). Sponsored by National Inst. of Standards and

Technology, Gaithersburg, MD.
The software is on two 1.2M, 5 1/4 inch diskettes, high

density. The diskettes are in ASCII format.

PB91-507715 CP T99 MUMPS System Lab., Nagoya (Japan). MUMPS Validation Sulte, Version 7.6 (ANSI), 1991.

1 Mar 91, mag tape NIST/SW/MT-91/013 System: DEC PDP-11/34. Language: MUMPS. Super-sedes PB90-500117. Other formats available as PB91-507699 (Vax/VMS Backup), PB91-507707 (for Micro-computers), and PB91-507723 (TAR). Sponsored by National Inst. of Standards and Technology, Gaithers-

burg, MD. Available in 9-track, ASCII character set, 1600 or 6250

PB91-507723 CP T99 MUMPS System Lab., Nagoya (Japan). MUMPS Validation Suite, Version 7.6 (TAR), 1991. Software.

1 Mar 91, mag tape NIST/SW/MT-91/014 System: DEC PDP-11/34; VAX/VMS Version V5.3 operating system. Language: MUMPS. Other formats available as PB91-507699 (Vax/VMS Backup), PB91-507707 (for Microcomputers), and PB91-507715 (ANSI). Sponsored by National Inst. of Standards and

Technology, Gaithersburg, MD. Available in 9-track, ASCII character set, 1600 or 6250

PB91-937301 Not available NTIS National Inst. of Standards and Technology, Gaithersburg, MD.

Validated Processor List (Cobol, Fortran, ADA,

Pascal, SQL). July 1991. Jul 91, 65p NISTIR/4623

PB91-937302 Not available NTIS National Inst. of Standards and Technology, Gaithers-

burg, MD.

Validated Processor List (Cobol, Fortran, ADA,

Pascal, SQL). October 1991. Oct 91, 94p NISTIR/4690 Supersedes PB91-937301.

PB92-108943 PC A07/MF A02 National Inst. of Standards and Technology (CSL),

Gaithersburg, MD.

Development of an Optical Disk System for the Automated Retrieval of EASEAR Records.

N. Willman. Aug 91, 139p NISTIR-4654 Sponsored by Social Security Administration, Baltimore, MD.

PC A03/MF A01 PB92-109040 National Inst. of Standards and Technology (CSL), Gaithersburg, MD.

Proceedings of the Workshop on High Integrity Software. Held in Galthersburg, MD. on January 22-23, 1991.

Special pub. (Final).
D. R. Wallace, D. R. Kuhn, and J. C. Cherniavsky.
Aug 91, 11p NIST/SP-500/190
Also available from Supt. of Docs. as SN003-003-03108-9. Prepared in cooperation with National Science Foundation, Washington, DC. PB92-112267 PC A04/MF A01 National Inst. of Standards and Technology (CSL), Gaithersburg, MD.

Proceedings of the Forum on Standards for High Integrity Software (DOD, Government, Industry). Held In Galthersburg, Maryland on June 28, 1991. D. R. Wallace, M. Brown, and A. McKinlay. Sep 91, 64p NISTIR-4656

See also PB92-109040. Prepared in cooperation with Navai Surface Warfare Center, Dahlgren, VA., and McDonnell Douglas Corp., St. Louis, MO.

PB92-116417 PC A03/MF A01 National Inst. of Standards and Technology (CSL), Gaithersburg, MD.

Software Reengineering: A Case Study and Lessons Learned.

Special pub. (Final).

M. K. Ruhi, and M. T. Gunn. Sep 91, 42p NIST/SP-500/193

Also available from Supt. of Docs. as SN003-003-03100-3. See also N91-24047.

PB92-117308 Not available NTIS National Inst. of Standards and Technology (NCSL), Gaithersburg, MD. Systems and Software Technology Div.

Interactive Video Software Portability: Migrating a DOS Application to POSIX.

Final rept.

R. D. Schneeman. 1991, 9p

Pub. in Proceedings of the Annual Technical Symposium (29th) Advanced information Interfaces: Making Data Accessible, Washington, DC., June 19-20, 1991, p1-9.

PB92-937300 Standing Order National Inst. of Standards and Technology, Gaithersburg, MD.

Validated Products List (Coboi, Fortran, ADA, Pascal, MUMPS, SQL).

1992, 1p

Supersedes PB91-937300.

Paper copy available on Standing Order, deposit account required (U.S., Canada, and Mexico \$100; all others \$200). Single copies also available in paper copy only.

Graphical Kernel System (GKS); Category: Software Standard; Subcategory: Graphics.
Federal information processing standards (Final). D. R. Benigni. c1991, 401p

Supersedes FIPS PUB 120. See also FIPS PUB 120-And FIPS PUB 120-1B. Also pub. as American National Standards Inst., New York rept. no. ANSI-X3.124-1985. Prepared in cooperation with American National Standards Inst., New York.

Three ring vinyl binder also available; North American Continent price \$7.00; all others write for quote.

FIPS PUB 120-1B National Inst. of Standards and Technology (CSL),

Gaithersburg, MD. Graphical Kernel System (GKS). Ada Binding; Category: Software Standard; Subcategory: Graphics.

Federal information processing standards (Final). D. R. Benigni. c1991, 218p Supersedes FIPS PUB 120. See also FIPS PUB 120-1

and FIPS PUB 120-1A. Also pub. as American National Standards Inst., New York rept. no. ANSI-X3.124.3-1989. Prepared in cooperation with American National

Standards Inst., New York.
Three ring vinyl binder also available; North American Continent price \$7.00; all others write for quote.

**FIPS PUB 146-1** PC A05/MF A01 National Inst. of Standards and Technology (CSL), Gaithersburg, MD.

Government Open Systems Interconnection Pro-file (GOSIP); Category: Hardware and Software Standards; Subcategory: Computer Network Protocols.

3 Apr 91, 81p Supersedes FIPS PUB 146.

Three ring vinyl binder also available: North American Continent price \$7.00; all others write for quote.

FIPS PUB 160 **PC E15** National Inst. of Standards and Technology (NCSL),

Gaithersburg, MD. American National Standard for C. Category: Software Standard. Subcategory: Programming Language. Final rept.

K. A. Miles. c1990, 361p Also pub. as American National Standards Inst., New York rept. no. ANSI-X3.159-1989. Prepared in cooperation with American National Standards Inst., New York.

Three-ring vinyl binder also available; North American Continent price \$7.00; all others write for quote.

### Information Processing Standards

PC A03 National Inst. of Standards and Technology (NCSL), Gaithersburg, MD.

Interface between Data Terminal Equipment (DTE) and Data Circuit-Terminating Equipment (DCE) for Operation with Packet-Switched Data Networks (PSDN), or between Two DTEs, by Dedicated Circult. Category: Hardware Standard. Subcategory: Data Transmission.

Final rept.

c1989, 24p

Also pub. as American National Standards Inst., New York rept. no. ANSI-X3.100-1989. Supersedes FIPS PUB 100. Prepared in cooperation with American National Standards Inst., New York.

Three ring vinyl binder also available; North American Continent price \$7.00; all others write for quote.

PC F15 FIPS PUB 120-1 National Inst. of Standards and Technology (CSL), Gaithersburg, MD.

FIPS PUB 161 National Inst. of Standards and Technology (NCSL), Gaithersburg, MD.
Electronic Data Interchange (EDI). Category: Soft-

ware Standard. Subcategory: Electronic Data Interchange.

Final rept. R. G. Saltman, 29 Mar 91, 10p

Three ring vinyl binder also available; North American Continent price \$7.00; all others write for quote.

**PC E18** FIPS PUB 54-1 National Inst. of Standards and Technology (CSL), Gaithersburg, MD.
Computer Output Microform (COM) Formats and

Reduction Ratios, 16MM and 105MM. Category: Hardware Standard; Subcategory: Medla.

Federal information processing standards (Final). T. C. Bagg. c15 Jan 91, 24p Supersedes FIPS PUB 54. Also pub. as American Na-

tional Standards Inst., New York rept. no. ANSI/AIIM-MS14-1988. Prepared in cooperation with American National Standards Inst., New York, and Association for Information and Image Management, Silver Spring, MD

Three ring vinyl binder also available: North American price \$7.00; all others write for quote.

### **COMPUTERS, CONTROL & INFORMATION THEORY**

### Information Processing Standards

FIPS PUB 9-1 PC A02/MF A01 National Inst. of Standards and Technology (NCSL), Gaithersburg, MD.

Congressional Districts of the United States. Category: Federal General Data Standard, Representations and Codes.

Federal information processing standards (Final).

H. Tom. 30 Nov 90, 10p Supersedes FIPS PUB 9.

Three ring vinyl binder also available, North American Continent price \$7.00; all others write for quote.

FIPS SET 1991 PC\$2300.00 National Inst. of Standards and Technology, Gaithersburg, MD.

Federal information Processing Standards Publication.

Federal Information Processing Standards.

1991, 2895p-in 162v Set includes FIPS PUB 0 through FIPS PUB 161 and

13 ring vinyl binders. Supersedes FIPS SET 1990.

PB91-132126 PC A03/MF A01 National Inst. of Standards and Technology, Gaithersburg, MD.
Fed-X: The NIST Express Translator. Revised, No-

vember 1990. S. N. Clark. Aug 90, 18p NISTIR-4371-REV See also PB90-269507.

PB91-132159 PC A03/MF A01 National Inst. of Standards and Technology, Gaithers-National first, of Standards and Technology, Standards burg, MD.

NIST PDES Toolkit: Technical Fundamentals. National PDES Testbed Report Series (Revised).

S. N. Clark. Nov 90, 34p NISTIR-4335/REV

See also PB90-250093.

PB91-132183 PC A03/MF A01 National Inst. of Standards and Technology (NCSL), Gaithersburg, MD. MIST Working Form for STEP: National PDES Testbed Report Series (Revised).
S. N. Clark. 19 Nov 90, 11p NISTIR-4351/REV Sea iso PB90-250044.

PB91-132209 PC A03/MF A01 National Inst. of Standards and Technology (NCSL), Gaithersburg, MD.
Use of the IRDS Standard In CALS (Revised).

D. K. Jefferson, and C. M. Furlani. Sep 89, 16p NISTIR-89-4169-REV

See also PB90-112467.

PB91-134635 Not available NTIS National Bureau of Standards (ICST), Gaithersburg, MD. Information Systems Engineering Div. Information Systems Engineering Program.

Final rept.
F. E. Spielman. 1987, 3p
Pub. in Proceedings of International Conference on Interactive Information and Processing Systems for Meteorology, Oceanography, and Hydrology (3rd), New Orleans, LA., January 12-16, 1987, p58-60.

PC A99/MF A04 PB91-144444 National Inst. of Standards and Technology (NCSL), Gaithersburg, MD.

Working implementation Agreements for Open Systems Interconnection Protocols.

T. Boland. Nov 90, 611p NISTIR-4448 See also PB90-259763. Presented at the NIST Workshop for Implementors of OSI Plenary Assembly, Gaithersburg, MD., September 14, 1990.

Not available NTIS Mational Bureau of Standards (ICST), Gaithersburg, MD. Information Systems Engineering Div. Specifications for a Federal information Process-Ing Standard Data Dictionary System. Final rept.

Final rept.
A. H. Goldfine. 1984, 13p
Pub. in Proceedings of NASA Administrative Data
Base Management Systems Conference, Greenbelt,
MD., May 25-26, 1983, p121-133 1984.

PB91-158915 Not available NTIS National Bureau of Standards (ICST), Gaithersburg, MD. Systems and Network Architecture Div. Features and Facilities of Estelle.

Final rept.

R. J. Linn. 1986, 26p Pub. in Protocol Specification, Testing and Verification, p271-296 1986.

PB91-171967 PC A99/MF E06 National Inst. of Standards and Technology (BFRL), Gaithersburg, MD.

Stable Implementation Agreements for Open Systems Interconnection Protocols. Version 4, Edition 1, December 1990.

Special pub. (Final). T. Boland. Mar 91, 803p NIST/SP-500/183 1. Boland. Mar 91, 803p NIS175F-5007103
Also available from Supt. of Docs. as SN903-01500000-4. Supersedes PB90-212192.
Based on the Proceedings of the NIST Workshop for Implementors of OSI. Held in Gaithersburg, Maryland.

PB91-187542 PC A03/MF A01 National Inst. of Standards and Technology (NCSL), Gaithersburg, MD. Advanced Systems Div. Standard Reference Materials: Calibration of NIST Standard Reference Material 3201 for 0.5 inch (12.65 mm) Seriai Serpentine Magnetic Tape Car-

Special pub. (Final).
M. P. Williamson, N. E. Willman, and D. S. Grubb.
Feb 91, 39p NIST/SP-260-115 Also available from Supt. of Docs. as SN003-003-03068-6.

PB91-197004 PC A11/MF A02 National Inst. of Standards and Technology, Gaithersburg, MD.

Stable Implementation Agreements for Open Systems Interconnection Protocols. Version 4, Edition 1, March 1991. Change Pages (Supplement).

Special pub. (Final).
T. Boland. Jun 91, 236p NIST/SP-500/183SUPPL1
Also available from Supt. of Docs. as SN903-01500000-4. See also PB91-171967.

PB91-201004 PC A05/MF A01 National Inst. of Standards and Technology (CSL), Gaithersburg, MD.

Application Portability Profile (APP): The U.S. Government's Open System Environment Profile OSE/ 1 Version 1.0.

Special pub. (Final). G. Fisher. Apr 91, 78p NIST/SP-500/187 Also available from Supt. of Docs.

PB91-203133 Not available NTIS National Inst. of Standards and Technology (NCSL), Gaithersburg, MD. Systems and Software Technology Div.

How the Government Shapes UNIX Standards.

Final rept. J. A. Hall. 1989, 1p Pub. in UNIX World 6, n4 p87(2) Apr 89.

PC A05/MF A01 PB92-110105 National Inst. of Standards and Technology (CSL), Gaithersburg, MD.
GOSIP Conformance and Interoperation Testing

and Registration.
J. S. Nightingale. Mar 91, 94p NISTIR-4594
See also FIPS PUB 146-1 and PB91-187716.

PB92-112200 PC A04/MF A01 National Inst. of Standards and Technology (CSL),

Gaithersburg, MD.

Stable implementation Agreements for Open Systems Interconnection Protocois. Version 4, Edition 1, June 1991 Change Pages (Supplement). Final rept.

T. Boland, and B. Gray. Sep 91, 68p NIST/SP500-

Also available from Supt. of Docs. as SN903-015-00000-4. See also PB91-171967 and PB91-197004.

PB92-119676 PC A08/MF A02 National Inst. of Standards and Technology (CSL), Gaithersburg, MD.

Government Open Systems Interconnection Profile Users' Guide, Version 2.

Final rept.

T. Boland. Oct 91, 167p NIST/SP-500/192 Also available from Supt. of Docs. Supersedes PB90-111212. See also PB91-171967, PB91-197004, PB92-112200 and FIPS PUB 146-1.

PB92-126408 PC A11/MF A03 National Inst. of Standards and Technology (CSL), Gaithersburg, MD.

Stable Implementation Agreements for Open Systems Interconnection Protocois. Version 4, Edition 1, Change Pages September 1991. Output from the September 1991 OSI Implementors Workshop. Held In Galthersburg, Maryland.

Final rept.

T. Boland. Nov 91, 242p NIST/SP500-183 3 Also available from Supt. of Docs. as SN903-015-00000-4. See also PB91-171967, PB91-197004 and PB92-112200.

PB92-126523 PC A17/MF A04 National Inst. of Standards and Technology (NCSL), Gaithersburg, MD.

Working Implementation Agreements for Open Systems Interconnection Protocois.

T. Boland. Mar 91, 394p NISTIR-4507

Proceedings of the NIST workshop held in Gaithersburg, MD., December 14, 1990. See also PB91-144444.

PC A05/MF A01 PB92-126580 National Inst. of Standards and Technology (CSL), Gaithersburg, MD.

Guidelines for the Evaluation of File Transfer, Access and Management Implementations.

Special pub.

P. Markovitz, S. Trus, and C. Royster. Oct 91, 85p NIST/SP-500/196

Also available from Supt. of Docs. See also PB90-111212, PB91-171967, PB91-107565 and PB92-110105. Sponsored by Army Information Systems Command, Fort Huachuca, AZ., Air Force Communications Command, Scott AFB, IL., and Internal Revenue Service, Washington, DC.

### Pattern Recognition & Image **Processing**

PC A03/MF A01 National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Robot Systems Div.

## **COMPUTERS, CONTROL & INFORMATION THEORY**

### Pattern Recognition & Image Processing

Real-Time Model-Based Tracking Combining Spatial and Temporal Features.

K. Chaconas, and M. Nashman. Jun 91, 24p NISTIR-4610

PB92-112275 PC A03/MF A01 National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Robot Systems Div. Integration-Based Method for Depth Estimation. D. Raviv. Sep 91, 24p NISTIR-4669 Prepared in cooperation with Florida Atlantic Univ., Boca Raton.

PB92-112507 PC A03/MF A01 National Inst. of Standards and Technology, Gaithersburg, MD.

Three Dimensional Reconstruction from Optical

Flow Using Temporal Integration.

R. Rangachar, T. H. Hong, M. Herman, and R. Luck.

Apr 91, 14p NISTIR-4570
Prepared in cooperation with American Univ., Washington, DC., Maryland Univ., College Park. Dept. of Mechanical Engineering, and Aspex, Inc., New York.

PB92-112564 PC A03/MF A01 National Inst. of Standards and Technology, Gaithers-

Analysis of Optical Flow Estimation Using Epipolar Plane Images.
R. Rangachar, T. H. Hong, M. Herman, and R. Luck.

Apr 91, 14p NISTIR-4569
Prepared in cooperation with American Univ., Washington, DC., Maryland Univ., College Park. Dept. of Mechanical Engineering, and Aspex, Inc., New York.

### General

PC A09/MF A02 PB91-148486 National Inst. of Standards and Technology (NCSL), Gaithersburg, MD.

Bibliography of Selected Computer Security Publications, January 1980-October 1989.

Special pub (January 1980-October 1989). R. Turn, and L. E. Bassham. Dec 90, 200p NIST/SP-800/1

Contract 43NANB922203

Also available from Supt. of Docs. as SN003-003-03060-1. Prepared in cooperation with Turn (Rein) Associates, Pacific Palisades, CA.

Not available NTIS PB91-159228 National Bureau of Standards (ICST), Gaithersburg, MD. Systems and Software Technology Div.

Thwarting the Hackers. Final rept.

E. F. Troy. 1984, 6p Pub. in Datamation, 6p, 1 Jul 84.

PB91-187740 PC A03/MF A01 National Inst. of Standards and Technology, Gaithersburg, MD.

Computer Security: Selected Articles.

internal rept. M. Swanson, and E. Lennon. cApr 91, 46p NISTIR-4545

PC A06/MF A01 PB91-187781 National Inst. of Standards and Technology, Gaithersburg, MD.

National Aeronautics and Space Administration's (NASA) Automated Information Security Handbook.

E. Roback. Mar 91, 107p NISTIR-4518, NHB-2410.9 Sponsored by National Aeronautics and Space Administration, Washington, DC. Information Resources Management Office.

PC A08/MF A01 PB91-187864 National Inst. of Standards and Technology (CSL), Gaithersburg, MD.

Public-Key Cryptography. Computer Security. Special pub. (Final). J. Nechvatal. Apr 91, 172p NIST/SP-800/2 Also available from Supt. of Docs. as SN003-003-

PB91-189571 Not available NTIS National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Semiconductor Electronics Div. Knowledge Verification of Machine-Learning Pro-cedures Based on Test Structure Measurements. Final rept.

D. Khera, L. W. Linholm, R. A. Allen, M. W. Cresswell, V. C. Tyree, W. Hansford, and C. Pina. 1991, 5p

Pub. in Proceedings of International Conference on Microelectronic Test Structures, Kyoto, Japan, March 18-20, 1991, p145-149.

PR91-203380 Not available NTIS National Bureau of Standards (ICST), Gaithersburg, MD. Systems and Software Technology Div.
Static Analysis Tools for Software Security Certification. Final rept.

D. R. Kuhn. 1988, 9p

Pub. in Proceedings of the National Computer Security Conference (11th), October 17-20, 1988, p290-298.

PB91-204107 Not available NTIS National Inst. of Standards and Technology (NCSL), Gaithersburg, MD. Computer Security Div. Data Encryption Standard: Past and Future. Final rept.

M. E. Smid, and D. K. Branstad. 1988, 10p Pub. in Proceedings of the IEEE (Institute of Electrical and Electronics Engineers) 76, n5 p550-559 1988.

PB91-216671 PC A07/MF A02 National Inst. of Standards and Technology (CSL), Gaithersburg, MD.

Standard Security Label for GOSIP: An Invitational Workshop. Held on April 9-10, 1991. N. Nazario. Jun 91, 133p NISTIR-4614

PB91-222638 PC A08/MF A02 National Inst. of Standards and Technology, Gaithersburg, MD.

**Automated Information Systems Security Program** Handbook.

Reprinted with Permission by U.S. Department of Human Services.

PB91-237677 Not available NTIS National Inst. of Standards and Technology (MEL), Gaithersburg, MD. Robot Systems Div. Geometric Reasoning for Constructing 3D Scene Descriptions for Images.

Final rept. E. L. Walker, and M. Herman, 1988, 16p Pub. in Artificial Intelligence 37, n1-3 p275-290 Dec 88.

PB92-108893 PC A08/MF A02 National Inst. of Standards and Technology (CSL), Gaithersburg, MD.

Guide to Expert System Building Tools for Microcomputers.

Special pub. (Final).

C. E. Dabrowski, and E. N. Fong. Jul 91, 151p NIST/ SP-500/188

Also available from Supt. of Docs. as SN003-003-03088-1.

PB92-112259 PC A09/MF A02 National Inst. of Standards and Technology, Gaithersburg, MD.

Glossary of Computer Security Terminology. E. Roback. Sep 91, 177p NISTIR-4659

PB92-112390 PC A03/MF A01 National Inst. of Standards and Technology (CSL), Gaithersburg, MD. Computer Security Div. Computer Security Bulletin Board System. User's

Gulde. M. Skandera, and M. Swanson. Sep 91, 40p NISTIR-4667

PB92-116391 PC A05/MF A01 National Inst. of Standards and Technology (CSL), Gaithersburg, MD. Security in ISDN.

Special pub. (Final). W. E. Burr. Sep 91, 77p NIST/SP-500/189 Also available from Supt. of Docs. as SN003-003-03112-7. See also PB90-198946 and N89-25634.

PB92-117068 Not available NTIS National Inst. of Standards and Technology (NCSL), Gaithersburg, MD.

Book Review: 'The Art of Computer Systems Performance Analysis' by R. Jain.

Final rept.

G. Lyon, 1991, 2p

Sponsored by Defense Advanced Research Projects Agency, Arlington, VA.

Pub. in IEEE (Institute for Electrical and Electronics Engineers) Design and Test of Computers, p90-91 Sep 91.

PC A03/MF A01 PB92-123140 National Inst. of Standards and Technology (CSL), Gaithersburg, MD.

Establishing a Computer Security Incident Response Capability (CSIRC).

Special pub. (Final).

J. P. Wack. Nov 91, 47p NIST/SP-800/3 Also available from Supt. of Docs as SN003-003-03121-6. See also PB90-115601.

### **DETECTION &** COUNTERMEASURES

### **Magnetic Detection**

AD-A230 438/4 PC A02/MF A01 National Inst. of Standards and Technology (NEL), Boulder, CO. Electromagnetic Fields Div.

### **DETECTION & COUNTERMEASURES**

### **Magnetic Detection**

Summary of Experiments with the Separated Aperture Technique of Dielectric Anomaly Detection.

F. R. Clague. Dec 89, 8p Rept no. SR-723-29-89

PB91-236919 Not available NTIS National Inst. of Standards and Technology (NEL), Boulder, CO. Electromagnetic Fields Div. Alignment Fixture for Millimeter Waveguide.

Final rept.

D. P. Kremer, and A. C. Newell. 1990, 4p Pub. in IEEE (Institute of Electrical and Electronics Engineers) Antennas and Propagation Society Magazine 32, n3 p45-48 Jun 90. Device for Audio-Frequency Power Measurement. Final rept. G. Q. Tong, Z. T. Qian, X. Y. Xu, and L. X. Liu. 1990,

5p Pub. in IEEE (Institute of Electrical and Electronics Engineers) Transactions on Instrumentation and Measurement 39, n3 p540-544 Jun 90.

### **Radiofrequency Detection**

PB91-143347 PC An3/MF An1 National Inst. of Standards and Technology (NEL), Boulder, CO. Electromagnetic Fields Div. Near-Fleid and Far-Fleid Excitation of a Long Conductor In a Lossy Medium.
D. A. Hill. Sep 90, 38p NISTIR-3954

Sponsored by Army Belvoir Research Development and Engineering Center, Fort Belvoir, VA.

PB91-237073 Not available NTIS National Inst. of Standards and Technology (EEEL), Boulder, CO. Electromagnetic Fields Div. General Technique to Correct Probe Position

Errors In Planar Near-Field Measurements to Arbitrary Accuracy.

Final rept.

PB92-110279

Circuits

PB91-149401

L. A. Muth. c1991, 20p

CO.

L. A. Muth, and R. L. Lewis. 1990, 8p Pub. in IEEE (Institute of Electrical and Electronics Engineers) Transactions on Antennas and Propagation 38, n12 p1925-1932 Dec 90.

National Inst. of Standards and Technology, Boulder,

General Analytic Correction for Probe-Position Errors in Spherical Near-Field Measurements.

Included in Jnl. of Research of the National Institute of

Standards and Technology, v96 n4 p391-410 Jul/Aug

(Order as PB92-110261, PC A05/MF A01)

PB91-236554 Not available NTIS National Inst. of Standards and Technology (EEEL), Gaithersburg, MD. Electricity Div.
Investigating the Use of Multimeters to Measure
Quantized Hall Resistance Standards. Final rept.

M. E. Cage, D. Y. Yu, B. M. Jeckelmann, R. L. Steiner, and R. V. Duncan. 1991, 5p See also PB91-101097.

Pub. in IEEE (Institute of Electrical and Electronics Engineers) Transactions on Instrumentation and Measurement 40, n2 p262-266 Apr 91.

### **ELECTROTECHNOLOGY**

### **Antennas**

PB91-132274 PC A07/MF A01 National Inst. of Standards and Technology (NEL), Boulder, CO. Electromagnetic Fields Div.

Spherical Near-Field Scanning: Experimental and

Theoretical Studies. R. C. Wittmann, and C. F. Stubenrauch, Jul 90, 127p NISTIR-3955

Sponsored by Rome Air Development Center, Hanscom AFB, MA. Electromagnetics Directorate.

PB92-112283 PC A04/MF A01 National Inst. of Standards and Technology (EEEL), Boulder, CO. Electromagnetic Fields Div. Personal Computer Codes for Analysis of Planar Near Fleids. L. A. Muth, and R. L. Lewis. Jun 91, 64p NISTIR-

Sponsored by Air Force Guidance and Metrology Center, Newark AFS, OH.

PB91-236802 Not available NTIS National Inst. of Standards and Technology (EEEL), Gaithersburg, MD. Electricity Div. RF-DC Differences of Thermal Voltage Converters

Arising from Input Connectors. Final rept.

D. X. Huang, J. R. Kinard, and G. Rebuldela. 1991,

See also PB91-101295.

PB91-236810

PB91-236893

Final rept.

PB91-237107

Final rept.

Frequency Range.

See also PB91-101493.

Pub. in IEEE (Institute of Electrical and Electronics Engineers) Transactions on Instrumentation and Measurement 40, n2 p360-365 Apr 91.

National Inst. of Standards and Technology (NEL),

Not available NTIS

Not available NTIS

Not available NTIS

Boulder, CO. Electromagnetic Technology Div.
Excess Low-Frequency Flux Noise in dc Squids incorporating Nb/Al-Oxide/Nb Josephson Junc-Final rept. M. E. Huber, and M. W. Cromar. 1990, 2p Pub. in Physica B 165-166, p77-78 1990.

PB91-134239 Not available NTIS National Inst. of Standards and Technology (NEL), Boulder, CO. Electromagnetic Fields Div. Callbration of Antenna Factor at a Ground Screen Fleid Site Using an Automatic Network Analyzer.

Final rept. E. B. Larsen, R. L. Ehret, D. G. Camell, and G. H. Koepke. 1989, 6p

Sponsored by Naval Air Systems Command, Washing-

Pub. in Proceedings of IEEE (Institute of Electrical and Electronics Engineers) National Symposium on Electromagnetic Compatibility, Denver, CO., May 23-25, 1989, p19-24.

Not available NTIS National Bureau of Standards (NEL), Boulder, CO. Electromagnetic Technology Div. High Speed Superconducting A/D Converter. Final rept.

C. A. Hamilton, F. L. Lloyd, and R. L. Kautz. 1984, 4p Contract N00014-83-F-0012

Sponsored by Office of Naval Research, Arlington, VA. Pub. in Proceedings of Government Microcircuit Applications Conference, Las Vegas, NV., November 6-8, 1984, p140-143.

J. R. Kinard, T. E. Lipe, and C. B. Childers. 1991, 4p. See also PB91-101378. Pub. in IEEE (Institute of Electrical and Electronics Engineers) Transactions on Instrumentation and Measurement 40, n2 p352-355 Apr 91.

National Inst. of Standards and Technology (EEEL),

Rational history (EEEE), Gaithersburg, MD. Electricity Div.
New Low-Voltage Standards In the DC to 1-MHz

Pub. in IEEE (Institute of Electrical and Electronics En-

gineers) Transactions on Instrumentation and Measurement 40, n2 p368-372 Apr 91.

N. M. Oldham, and R. M. Henderson. 1991, 5p

and Thermal Converter Combinations.

National Inst. of Standards and Technology (EEEL), Gaithersburg, MD. Electricity Div.
AC-DC Difference Relationships for Current Shunt

PB91-149310 Not available NTIS National Inst. of Standards and Technology (NEL),

Gaithersburg, MD. Electricity Div.
Comprehensive Approach for Modeling and Testing Analog and Mixed-Signal Devices. Final rept.

T. M. Souders, and G. N. Stenbakken. 1990, 8p Pub. in Proceedings of International Test Conference, Washington, DC., September 10-14, 1990, p169-176

National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Electricity Div.

Not available NTIS

PB91-237446 Not available NTIS National Inst. of Standards and Technology (EEEL), Gaithersburg, MD. Electricity Div.
Improvements for Automating Voltage Calibrations Using a 10-V Josephson Array. Final rept. R. L. Steiner, and R. J. Astalos. 1991, 5p

See also PB91-101592.

Pub. in IEEE (Institute of Electrical and Electronics Engineers) Transactions on Instrumentation and Measurement 40, n2 p321-325 Apr 91.

PB91-148239 Not available NTIS National Inst. of Standards and Technology (NEL), Boulder, CO. Electromagnetic Fields Div. Spherical Near-Field Scanning: Determining the incident Field Near a Rotatable Probe.

Final rept. R. C. Wittman. 1990, 4p

Pub. in Proceedings of Antennas and Propagation Symposium Digest, Dallas, TX., May 7-11, 1990, p224-

PB91-185124 PC A03/MF A01 National Inst. of Standards and Technology (NEL), Boulder, CO. Electromagnetic Fields Div. NIST Calibration Procedure for Vertically Polarized Monopole Antennas 30 kHz to 300 MHz.

Technical note. D. G. Camell, E. B. Larsen, J. E. Cruz, and D. A. Hill. Jan 91, 26p NIST/TN-1347

Also available from Supt. of Docs. as SN003-003-03077-5.

38

PB91-237586 Not available NTIS National Inst. of Standards and Technology (PL), Gaithersburg, MD. Physics Lab. Office.

New international Electrical Reference Standards Based on the Josephson and Quantum Hall Effects.

Final rept.

B. N. Taylor, and T. J. Witt. 1989, 16p Sponsored by Bureau International des Poids et Mesures, Sevres (France).

Pub. in Metrologia 26, n1 p47-62 1989.

PB92-117076 Not available NTIS National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Electricity Div.

Need for Power Quality Testing Standards. Final rept.

F. D. Martzloff, 1990, 2p

Pub. in Proceedings of National Conference Power Quality for End-Use Applications (2nd), San Francisco, CA., March 21-23, 1990, p171-172.

PB92-117431 Not available NTIS National Inst. of Standards and Technology (EEEL), Gaithersburg, MD. Electricity Div. Performance Evaluation of a New Audio-Frequen-

cy Power Bridge. Final rept. B. C. Waltrip, and N. M. Oldham. 1991, 4p

See also PB91-101634.

Pub. in IEEE (Institute for Electrical and Electronics Engineers) Transactions on Instrumentation and Measurement 40, n2 p380-383 Apr 91.

### **Electromechanical Devices**

Not available NTIS Notional Inst. of Standards and Technology (EEEL),
Boulder, CO. Electromagnetic Fields Div.
Determining Adapter Efficiency by Envelope Averaging Swept Frequency Reflection Data.
Final rept.

W. C. Daywitt. 1990, 5p Pub. in IEEE (Institute of Electrical and Electronics Engineers) Transactions on Microwave Theory and Techniques 38, n11 p1748-1752 Nov 90.

#### **Optoelectronic Devices & Systems**

PC A01/MF A01 AD-A227 836/4 National Inst. of Standards and Technology, Gaithers-

Photomultiplier Housing for Vacuum Operation of Side-on 1P28-Type Tubes.

W. Braun, R. Klein, A. Fahr, and A. Mele. 1990, 4p ARO-25911.3-CH,

Contract MIPR-ARO-119-89 Pub. in Review of Scientific Instruments, v61 n5 p1558-1560 May 90.

PB91-134734 Not available NTIS National Bureau of Standards (NEL), Boulder, CO. Electromagnetic Technology Div.

Progress in the Development of Miniature Optical Fiber Current Sensors.

Final rept.

D. Tang, and G. W. Day. 1988, 1p Sponsored by Defense Nuclear Agency, Washington, DC., and Los Alamos National Lab., NM. Pub. in Proceedings of IEEE (Institute of Electrical and

Electronics Engineers) Lasers and Electro-Optics Society 1988 LEOS Annual Meeting, Santa Clara, CA., November 2-4, 1988, p306.

PB91-134742 Not available NTIS National Inst. of Standards and Technology (NEL), Boulder, CO. Electromagnetic Technology Div. Practical Considerations in the Design of Optical Fiber Current Sensors.

Final rept.

D. Tang, A. H. Rose, and G. W. Day. 1990, 6p Sponsored by National Aeronautics and Space Administration, Washington, DC., Department of Defense, Washington, DC., and Department of Energy, Washington, DC.

Pub. in Proceedings of International Congress on Opti-cal Science and Engineering, The Hague, Nether-lands, March 12-15, 1990, 6p.

Not available NTIS PR91-148254 National Bureau of Standards (ICST), Gaithersburg, MD. Advanced Systems Div. Conformance Verification of FDDI Stations.

Final rept.

L. Zuqiu, and W. E. Burr. 1988, 15p Pub. in Fiber and Integrated Optics 7, n3 p181-195

PB91-148999 Not available NTIS National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Semiconductor Electronics Div. Micromachined Thermal Radiation Emitter from a Commercial CMOS Process.

Final rept. M. Parameswaran, A. M. Robinson, D. L. Blackburn, M. Gaitan, and J. Geist. 1991, 3p

Pub. in IEEE (Institute of Electrical and Electronics Engineers) Electron Device Letters 12, n2 p57-59 Feb 91.

PB91-149146 Not available NTIS National Inst. of Standards and Technology (NEL), Boulder, CO. Electromagnetic Technology Div Performance and Limitations of Faraday Effect Sensors. Final rept.

A. H. Rose, M. N. Deeter, D. Tang, and G. W. Day. 1990. 1p

Sponsored by Department of Energy, Washington, DC., and Department of Defense, Washington, DC. Pub. in Proceedings of Electrochemical Society Fall Meeting, Seattle, WA., October 14-19, 1990, p1093.

PB91-162206 Not available NTIS National Inst. of Standards and Technology (NEL), Boulder, CO. Electromagnetic Fields Div. Photonic Probes for the Measurement of Electromagnetic Fields Over Broad Bandwidths. Final rept.

K. D. Masterson, L. D. Driver, and M. Kanda. 1989, 6p

Pub. in Proceedings of IEEE (Institute of Electrical and Electronics Engineers) National Symposium on Electromagnetic Compatibility, Denver, CO., May 23-25, 1989, p1-6.

PB91-174615 Not available NTIS National Inst. of Standards and Technology (NEL), Boulder, CO. Electromagnetic Technology Div Iron-Garnet Magnetic Field Sensors with 100 pT/ per square root Hz Noise-Equivalent Field. Final rept.

M. N. Deeter, A. H. Rose, and G. W. Day. 1990, 4p Pub. in Proceedings of Optical Fibre Sensors Conference, Sydney, New South Wales, Australia, December 2-6, 1990, p341-344.

PR91-174706 Not available NTIS National Bureau of Standards (NML), Gaithersburg, MD. Radiometric Physics Div.

Electronic and Radiometric Characteristics of Near Infrared Photodiodes.

Final rept.

G. Eppeldauer, M. Tsudagawa, E. Zalewski, and J.

Houston. 1987, 10p
Pub. in Proceedings of International Symposium on Tech. Comm. Photon Detect., Int. Meas. Confed., v13 p215-224 1987.

PB91-175109 Not available NTIS National Inst. of Standards and Technology (NEL), Boulder, CO. Electromagnetic Fields Div.
Optical Fiber Current Sensors with Temperature Stabilities Near the Material Limit. Final rept.

D. Tang, A. H. Rose, and G. W. Day. 1990, 4p Pub. in Proceedings of Optical Fibre Sensors Conference (7th), Sydney, New South Wales, Australia, December 2-6, 1990, p77-80.

PB91-175158 Not available NTIS National Inst. of Standards and Technology (NEL), Boulder, CO. Electromagnetic Technology Div. Faraday Effect Current Sensing Using a Sagnac Interferometer with a 3x3 Coupler. Final rept.

L. R. Veeser, and G. W. Day. 1990, 189p Pub. in Proceedings of Optical Fibre Sensors Conference (7th), Sydney, New South Wales, Australia, December 2-6, 1990, p325-328.

PB91-187625

(Order as PB91-187617, PC A06/MF A01) National Inst. of Standards and Technology, Gaithersburg, MD. Linearity of a Silicon Photodiode at 30 MHz and its

Effect on Heterodyne Measurements.

A. L. Miodall, and C. Winnewisser, 1991, 4p Included in Jnl. of Research of the National Institute of Standards and Technology, v96 n2 p143-146 Mar/Apr

PB91-194845 Not available NTIS National Inst. of Standards and Technology (NEL), Boulder, CO. Electromagnetic Technology Div.
Hydrogenated Amorphous Germanium Detectors Deposited onto Channel Waveguldes. Final rept.

D. R. Larson, and R. J. Phelan. 1990, 3p. Pub. in Optics Letters 15, n10 p544-546, 15 May 90.

Not available NTIS PB91-203349 National Bureau of Standards (NML), Gaithersburg, MD. Radiation Physics Div.
Stable, High Quantum Efficiency Silicon Photodiodes for Vacuum-UV Applications.

Final rept.

R. Korde, L. R. Canfield, and B. Wallis. 1988, 8p Pub. in Proceedings of SPIE (Society of Photo-Optical Instrumentation Engineers) Ultraviolet Technology II, Orlando, FL., April 4-5, 1988, p153-160.

Not available NTIS PB91-203976 National Inst. of Standards and Technology (NEL), Boulder, CO. Electromagnetic Technology Div. Integrated-Optic Wavegulde Glass Lasers. Final rept.

N. A. Sanford, K. J. Malone, and D. R. Larson. 1991, 1p

Pub. in Proceedings of Optical Fiber Communication Conference, San Diego, CA., February 18-22, 1991, p27.

Not available NTIS PR91-204131 National Inst. of Standards and Technology (NEL), Boulder, CO. Electromagnetic Technology Div

### **Optoelectronic Devices & Systems**

Analyzing Integrated Optical Waveguides: A Comparison of Two New Methods.

Y. Tu, I. C. Goyal, and R. L. Gallawa. 1990, 3p Pub. in Applied Optics 29, n36, p5313-5315, 20 Dec

PB91-236901 Not available NTIS National Inst. of Standards and Technology (EEEL), Gaithersburg, MD. Semiconductor Electronics Div. Generalized Photodiode Self-Calibration Formula. Final rept

R. Kohler, J. Geist, and J. Bonhoure. 1991, 3p Pub. in Applied Optics 30, n7 p884-886, 1 Mar 91.

PB91-237792 Not available NTIS National Inst. of Standards and Technology (EEEL), Gaithersburg, MD. Electronics and Electrical Engineering Lab. Office.

Dealing with Obvious Issues in Lighting.

Final rept.

J. A. Worthey. 1991, 4p

Pub. in Lighting Design and Application 21, n8 p15, 17-19, Aug 91.

PC A05/MF A02 PB92-110261 National Inst. of Standards and Technology, Gaithersburg, MD.

Journal of Research of the National Institute of Standards and Technology. July-August 1991. Volume 96, Number 4.

c1991, 100p Also available from Supt. of Docs as SN703-027-0041-5. See also PB92-110279 through PB92-110311 and PB91-216705. Library of Congress catalog card no. 89-656121.

PB92-110295

(Order as PB92-110261, PC A05/MF A01) National Inst. of Standards and Technology, Gaithersburg, MD.

Numerical Modeling of Silicon Photodiodes for High-Accuracy Applications. Part 1. Simulation Programs.

J. Geist, D. Chandler-Horowitz, A. M. Robinson, and C. R. James. c1991, 7p

Prepared in cooperation with Alberta Univ., Edmonton. Included in Jnl. of Research of the National Institute of Standards and Technology, v96 n4 p463-469 Jul/Aug

PB92-110303

(Order as PB92-110261, PC A05/MF 01) National Inst. of Standards and Technology, Gaithers-

burg, MD. Numerical Modeling of Silicon Photodiodes for High-Accuracy Applications. Part 2. Interpreting Oxide-blas Experiments.

J. Geist, R. Koehler, R. Goebel, A. M. Robinson, and C. R. James. c1991, 9p Prepared in cooperation with Bureau International des

Poids et Mesures, Sevres (France), and Alberta Univ., Edmonton.

Included in Jnl. of Research of the National Institute of Standards and Technology, v96 n4 p471-479 Jul/Aug

PB92-110311

(Order as PB92-110261, PC A05/MF A01) National Inst. of Standards and Technology, Gaithersbura, MD.

Numerical Modeling of Silicon Photodiodes for High-Accuracy Applications. Part 3. interpolating and Extrapolating Internal Quantum-Efficiency Calibrations.

J. Geist, A. M. Robinson, and C. R. James. c1991, 12p

Prepared in cooperation with Alberta Univ., Edmonton. Included in Jnl. of Research of the National Institute of Standards and Technology, v96 n4 p481-492 Jul/Aug PB92-112382 PC A05/MF A02 National Inst. of Standards and Technology, Gaithersburg, MD.

HgCdTe Detector Reliability Study for the GOES

Program. D. G. Seiler, G. G. Harman, J. R. Lowney, S. Mayo, and W. S. Liggett. Sep 91, 100p NISTIR-4687 Sponsored by National Oceanic and Atmospheric Administration, Rockville, MD.

PB92-116763 Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Radiometric Physics Div. Temperature Monitored/Controlled Silicon Photodlodes for Standardization. Final rept.

G. Eppeldauer. 1991, 7p Pub. in Proceedings of SPIE (Society of Photo-Optical Instrumentation Engineers) - Surveillance Technologies, v1479 p71-77 1991.

PB92-116771 Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Radiometric Physics Div. Fourteen-Decade Photocurrent Measurements with Large-Area Silicon Photodiodes at Room Temperature. Final rept.

G. Eppeldauer, and J. E. Hardis. 1991, 9p Pub. in Applied Optics 30, n22 p3091-3099, 1 Aug 91.

### **Power & Signal Transmission Devices**

PB91-133892 Not available NTIS National Inst. of Standards and Technology (NEL), Boulder, CO. Electromagnetic Technology Div AC Loss Measurements of Two Multifliamentary NbTl Composite Strands. Final rept.

E. W. Collings, K. R. Marken, M. D. Sumption, R. B. Goldfarb, and R. J. Loughran. 1990, 8p See also DE90005388. Sponsored by Department of Energy, Washington, DC. Div. of High Energy Physics. Pub. in Advances in Cryogenic Engineering (Materials)

36, p169-176 1990.

Not available NTIS PB91-134114 National Inst. of Standards and Technology (NEL), Boulder, CO. Electromagnetic Fields Div.

Determination of Scattering Parameters with Respect to the Characteristic Impedance of Precision Coaxial Air-Line Standards. Final rept.

D. R. Holt. 1990, 2p

Pub. in Proceedings of Conference on Precision Electromagnetic Measurements (CPEM 90), Ottawa, Canada, June 11-14, 1990, p282-283.

Not available NTIS PB91-134650 National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Electricity Div.

Partial Discharges in Low Voltage Cables.

Final rept. J. P. Steiner, and F. D. Martzloff. 1990, 4p Pub. in Proceedings of IEEE (Institute of Electrical and Electronics Engineers) International Symposium on Electrical Insulation, Toronto, Canada, June 3-6, 1990, p149-152.

Not available NTIS National Inst. of Standards and Technology (NEL), Boulder, CO. Electromagnetic Technology Div. Magnetoresistance of Multifilament Al/Al-Alloy Conductors.

Final rept.

C. A. Thompson, and F. R. Fickett. 1990, 7p Pub. in Advances in Cryogenic Engineering Materials, v36 p663-669 1990.

PB91-161943 Not available NTIS National Inst. of Standards and Technology (MSEL), Gaithersburg, MD. Polymers Div. Proceedings of Cable '89 Workshop.

Final rept.

Final rept.

M. G. Broadhurst, and E. Kelly. 1990, 119p

Pub. in Proceedings of JICABLE/EPRI/CEA Workshop 'Cable 89' The Aging of Extruded Dielectric Cables, St. Petersburg, FL., November 2-3, 1990, 119p.

PB91-236752 Not available NTIS National Inst. of Standards and Technology (EEEL), Boulder, CO. Electromagnetic Technology Div. Methods of Analyzing Planar Optical Waveguides.

I. C. Goyal, R. L. Gallawa, and A. K. Ghatak. 1991,

Pub. in Optic Letters 16, n1 p30-32, 1 Jan 91.

Not available NTIS PB91-236992 National Inst. of Standards and Technology (EEEL), Boulder, CO. Electromagnetic Fields Div. Characteristic Impedance Determination Using Propagation Constant Measurement.

Final rept. R. Marks, and D. Williams. 1991, 3p

Pub. in IEEE (Institute of Electrical and Electronics Engineers) Microwave and Guided Wave Letters 1, n6 p141-143 Jun 91.

PB92-116656 Not available NTIS National Inst. of Standards and Technology (EEEL), Boulder, CO. Electromagnetic Fields Div.

Mode-Stirred Chamber for Measuring Shielding Effectiveness of Cables and Connectors: Assessing MIL-STD-1344A Method 3008. Final rept.

M. L. Crawford, and J. M. Ladbury. 1989, 7p See also PB89-149264.

Pub. in Connection Technology 5, n6 p45-51 Jun 89.

Not available NTIS PB92-117324 National Inst. of Standards and Technology (EEEL), Boulder, CO. Electromagnetic Fields Div. Air Gage Size Measurement of Microwave Standards. Final rept.

G. V. Sherwood. 1991, 10p

Pub. in Proceedings of Measurement Science Conference, Anaheim, CA., January 31-February 1, 1991, p1-

### Resistive, Capacitive, & Inductive Components

N91-25797/2

(Order as N91-25755/0, PC A99/MF A04) National Inst. of Standards and Technology (NML), Boulder, CO. Time and Frequency Div.
Environmental Sensitivities of Quartz Crystal Oscillators.

F. L. Walls. May 90, 22p

Pub. in Proceedings of Annual Precise Time and Time Interval (PTTI) Applications and Planning Meeting (22nd) p465-486 (See N91-25755 17-70).

### Resistive, Capacitive, & Inductive Components

PB91-134320 Not available NTIS National Bureau of Standards (NML), Gaithersburg, MD. Temperature and Pressure Div. Stablity of Thermistors.

Final rept.

B. W. Mangum, 1987, 6p

Pub. in Proceedings of International Symposium on Temperature Measurement in Industry and Science, p170-175 1987

Not available NTIS PB91-134338 National Bureau of Standards (NML), Gaithersburg, MD. Temperature and Pressure Div.

SRM 1970 - Succinonitrile Triple-Point Standard -

And its Use in Calibration of Thermistors.
Final rept.
B. W. Mangum. 1987, 6p
Pub. in Proceedings of International Symposium on Temperature Measurement in Industry and Science, p60-65 1987.

PB91-134866 Not available NTIS National Bureau of Standards (NML), Boulder, CO. Time and Frequency Div.

Environmental Effects on the Medium and Long

Term Frequency Stability of Quartz Oscillators.

Final rept.
F. L. Walls. 1988, 9p
Pub. in Proceedings of European Frequency and Time
Forum (2nd), Neuchatel, Switzerland, March 16-18, 1988, p719-727.

PB91-174912 Not available NTIS National Inst. of Standards and Technology (NEL), Boulder, CO. Electromagnetic Technology Div.
Noise-Affected i-V Curves in Small Hysteretic Josephson Junctions.

Final rept. R. L. Kautz, and J. M. Martinis. 1990, 35p Sponsored by Office of Naval Research, Arlington, VA. Pub. in Physical Review B 42, n16 p9903-9937, 1 Dec

PB91-190116 Not available NTIS National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Chemical Process Metrology Div. Transparent Thin Film Thermocouple. Final rept.

M. Yust, and K. G. Kreider. 1989, 6p See also PB91-110635.

Pub. in Thin Solid Films 176, n1 p73-78 Sep 89.

PB91-195446 Not available NTIS National Inst. of Standards and Technology (NEL), Boulder, CO. Electromagnetic Technology Div. Sidelobe Suppression in Small Josephson Junctions.

Final rept.

R. L. Peterson. 1991, 4p Pub. in Cryogenics 31, p132-135 Feb 91.

### **Semiconductor Devices**

PC A03/MF A01 DE91002169 Solar Energy Research Inst., Golden, CO. Scanning tunneling microscopy studies of the surfaces of a-Si:H and a-SiGe:H films. Annual report, 1 December 1989-31 January 1991.

Progress rept.
A. Gallagher, R. Ostrom, and D. Tannenbaum. Jun 91, 35p SERI/TP-214-4409
Contract AC02-83CH10093
Sponsored by Department of Energy, Washington, DC.

PB91-134692 Not available NTIS National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Semiconductor Electronics Div. Current Density Dependence of Electromigration t50 Enhancement Due to Pulsed Operation. Final rept.

J. S. Suehle, and H. A. Schafft, 1990, 5p Pub. in Proceedings of Annual Conference on Reliability Physics 1990 (28th), New Orleans, LA., March 27-29, 1990, p106-110.

PB91-147181 Not available NTIS National Inst. of Standards and Technology (NEL), Boulder, CO. Electromagnetic Technology Div. Low-Temperature, Electrically Calibrated SOS Bo-iometer for Power and Energy Measurements.

Final rept. R. M. Craig, and R. J. Phelan. 1990, 11p

Sponsored by Aerospace Guidance and Metrology Center, Newark AFS, OH.

Pub. in Proceedings of Measurement Science Conference, Anaheim, CA., February 8-9, 1990, p3A-1-3A-11

PB91-147520 Not available NTIS National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Semiconductor Electronics Div. Verification of the Relation between Two-Probe and Four-Probe Resistances as Measured on Silicon Wafers. Final rept.

J. J. Kopanski, J. Albers, G. P. Carver, and J. R. Ehrstein. 1990, 7p
Pub. in Jnl. of the Electrochemical Society 137, n12

p3935-3941 Dec 90.

PB91-147819 Not available NTIS National Bureau of Standards (NEL), Gaithersburg, MD. Semiconductor Electronics Div. Thermai Characterization of integrated Circuits - A

Tutorial.

Final rept.

F. F. Oettinger. 1986, 4p

Pub. in Proceedings of Symposium SEMI-THERM 3, Scottsdale, AZ., December 10, 1986, 4p.

PB91-147827 Not available NTIS National Bureau of Standards (NEL), Gaithersburg, MD. Semiconductor Electronics Div.

Thermai Measurements of VLSi Packages: A Criticai Review.

Final rept.

F. F. Oettinger. 1985, 4p

Pub. in Program and Extended Abstracts VLSI Packaging Workshop, Gaithersburg, MD., September 9-11, 1985, p26-29.

PB91-147918 Not available NTIS National Bureau of Standards (NEL), Gaithersburg, MD. Semiconductor Electronics Div.

investigation of Photoconductive Picosecond Microstripiine Switches on Seif-impianted Silicon on Sapphire (SOS).

Final rept.

P. Pollack-Dingels, G. Burdge, C. H. Lee, A. C. Seabaugh, R. T. Brundage, M. I. Bell, and J. Albers.

1987. 5p See also PB90-218124.

Pub. in Proceedings of OSA-IEEE (LEOS) Meeting (2nd) Picosecond Electronics and Optoelectronics II, Incline Village, NV., January 14-16, 1987, p232-236.

Not available NTIS PB91-148197 National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Semiconductor Electronics Div.

Comparison of High-ResistIvity Measurements of Sillcon by AC impedance, DC Resistance, van der Pauw, and Four-Probe Methods. Final rept.

W. R. Thurber, J. R. Ehrstein, and J. R. Lowney. 1990, 2p

Pub. in Extended Abstracts, Electrochemical Society 1990 Fall Meeting, Seattle, WA., October 14-19, 1990, v90-2 p581-582.

PB91-149062 Not available NTIS

National Bureau of Standards (NEL), Gaithersburg, MD. Semiconductor Electronics Div.

Characteristics of the Breakdown Voltage of Power MOSFETs After Total Dose irradiation. Final rept.

R. D. Pugh, A. H. Johnston, and K. F. Galloway. 1986, 5p

Sponsored by Air Force Inst. of Tech., Wright-Patter-

son AFB, OH. Pub. in IEEE (Institute of Electrical and Electronics En-

gineers) Transactions on Nuclear Science NS-33, n6 p1460-1464 Dec 86.

PB91-149070 Not available NTIS National Inst. of Standards and Technology (NEL),

Boulder, CO. Electromagnetic Fields Div. MMiC Related Metrology at the National institute of Standards and Technology.

Final rept.

G. R. Reeve, R. Marks, and D. L. Blackburn. 1990, 4p

Pub. in Proceedings of IEEE (Institute of Electrical and Electronics Engineers) Instrumentation and Measurement Technology Conference, San Jose, CA., February 13-15, 1990, p196-199.

PB91-149120 Not available NTIS National Bureau of Standards (NEL), Gaithersburg, MD. Semiconductor Electronics Div.

Measurement of Capacitance on Wafers.

P. Roitman, J. S. Suehle, T. J. Russell, and M. Gaitan. 1986, 9p

Pub. in Proceedings of IEEE (Institute of Electrical and Electronics Engineers) VLSI (Very Large Scale Integration) Workshop on Test Structures, Long Beach, CA., February 17-18, 1986, p96-104.

PB91-149880 Not available NTIS National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Precision Engineering Div. Selective-Area Epitaxiai Growth of Gallium Arsenide on Silicon Substrates Patterned Using a Scanning Tunneling Microscope Operating in Air. Final rept.

J. A. Dagata, W. Tseng, J. Bennett, C. J. Evans, J. Schneir, and H. H. Harary. 1990, 3p See also AD-A209 079.

Pub. in Applied Physics Letters 57, n23 p2437-2439, 3 Dec 90.

Not available NTIS PB91-149989 National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Applied and Computational Mathe-

Modeiling Gailium Arsenide Transistors.

Final rept. J. L. Blue, and C. L. Wilson. 1990, 9p

Pub. in Lectures in Applied Mathematics 25, p89-97

PB91-158873 Not available NTIS National Bureau of Standards (NEL), Gaithersburg, MD. Precision Engineering Div.

### Semiconductor Devices

NBS Submicron Particle Standards for Microcontamination Measurement. Final rept

T. R. Lettieri, 1989, 7p

Pub. in Semiconductor Fabrication: Technology and Metrology, ASTM STP 990, p215-221 1989.

PB91-159087 Not available NTIS National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Precision Engineering Div. Submicrometer SEM Magnification Standard.

M. T. Postek, and R. C. Tiberio. 1989, 4p Pub. in National Nanofabrication Facility Research Accomplishments 1988-89, 4p 1989.

PB91-159244 Not available NTIS National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Semiconductor Electronics Div. Permittivity Measurements on Moiecular-Sized Sampies.

Final rept. A. van Roggen, L. Yuwono, H. Zhou, P. H. E. Meijer, and J. J. Kopanski. 1990, 6p Sponsored by National Science Foundation, Washing-

ton, DC.

Pub. in Proceedings of Conference on Electrical Insulation and Dielectric Phenomena, Pocono Manor, PA., October 29-31, 1990, p385-390.

PB91-159749 PC A03/MF A01 National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Semiconductor Electronics Div. Center for Electronics and Electrical Engineering Technical Progress Bulletin Covering Center Pro-grams, July to September 1990, with 1991 CEEE Events Calendar.

J. A. Gonzalez. Jan 91, 48p NISTIR-4496 See also PB91-107201.

PB91-167163 PC A03/MF A01 National Inst. of Standards and Technology (NEL), Rational list. of Standards and reclinicipy (NEL), Gaithersburg, MD. Center for Mfg. Engineering. Standard Reference Materials: Bright-Chromium Linewidth Standard, SRM 476, for Calibration of Optical Microscope Linewidth Measuring Systems.

Special pub (Final). C. F. Vezzetti, R. N. Varner, and J. E. Potzick. Jan 91, 47p NIST/SP-260/114

Also available from Supt. of Docs. as SN003-003-

Not available NTIS National Bureau of Standards (NEL), Gaithersburg, MD. Semiconductor Devices and Circuits Div. Design, Fabrication, and Testing of an Interconnect Test Structure for Evaluating VLSI Processes.

M. W. Cresswell, E. S. Coleman, W. D. Partlow, and L. W. Linholm. 1985, 2p
Pub. in Proceedings of Government Microcircuit Appli-

cations Conference, Orlando, FL., November 5-7, 1985, p359-360.

Not available NTIS PR91-175000 National Bureau of Standards (NEL), Gaithersburg, MD. Semiconductor Devices and Circuits Div. Characterizing VLSi Processes Using Test Structures.

Final rept.

L. W. Linholm, J. A. Mazer, and K. F. Galloway. 1985, 3p

Pub. in Proceedings of Digest of the DOD/NBS Conference on Microelectronic Electromagnetic Susceptibility, Gaithersburg, MD., March 12-13, 1985, p16-18.

Not available NTIS National Bureau of Standards (NEL), Gaithersburg, MD. Semiconductor Electronics Div.

Evaluation and Improvement of E-Beam Exposure Routines by Use of Microelectronic Test Structures.

T. W. O'Keeffe, M. W. Cresswell, L. W. Linholm, and

D. J. Radack. 1986, 13p Pub. in Proceedings of IEEE VLSI Workshop on Test Structures, Long Beach, CA., February 17-18, 1986,

PB91-189399 Not available NTIS National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Semiconductor Electronics Div. Uniform Junction Temperature AiGaAs/GaAs Power Heterojunction Bipoiar Transistors on Silicon Substrates.

Final rept. G. Gao, Z. Fan, D. L. Blackburn, M. S. Unlu, J. Chen,

K. Adomi, and H. Morkoc. 1991, 3p Sponsored by Air Force Office of Scientific Research, Bolling AFB, DC. Pub. in Applied Physics Letter 58, n10 p1068-1070, 11

PB91-189779 Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Inorganic Analytical Research Div. Neutron Activation Analysis in Electronic Technoiogy. Final rept.

R. M. Lindstrom. 1988, 1p

Pub. in Jnl. of the Electrochemical Society 135, n8 pC372 1988.

PB91-194712 Not available NTIS National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Precision Engineering Div. Pattern Generation on Semiconductor Surfaces by a Scanning Tunneling Microscope Operating in Air. Final rept. J. A. Dagata, J. Schneir, H. H. Harary, J. Bennett, and W. Tseng. 1991, 5p Pub. in Jnl. of Vacuum Science and Technology B 9, n2 p1384-1388 Mar/Apr 91.

PB91-194829 Not available NTIS National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Semiconductor Electronics Div. High Spatial Resolution Mapping of Semiconductor Resistivity. Final rept.

J. J. Kopanski, G. P. Carver, J. R. Lowney, D. S. Miles, and D. B. Novotny. 1991, 2p Pub. in Extended Abstracts, v91-1 p698-699 1991.

PB91-203141 Not available NTIS National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Semiconductor Electronics Div. Cratering. Final rept.

R. G. Harman. 1989, 13p Pub. in Reliability and Yield Problems of Wire Bonding

in Microelectronics, Chapter 5, p141-163 1989.

PB91-203752 Not available NTIS National Bureau of Standards (NEL), Gaithersburg,

MD. Precision Engineering Div.

New Approach to image Modeling and Edge Detection in the SEM. Final rept.

Do. Nyyssonen. 1988, 9p
Sponsored by CD Metrology, Inc., Germantown, MD.
Pub. in Proceedings of SPIE (Society of Photo-Optical Instrumentation Engineers) - Integrated Circuit Metrology ogy, Inspection, and Process Control II, v921 p48-56 1988.

Not available NTIS National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Semiconductor Electronics Div. Building-in Reliability: Making it Work.

Final rept.

H. A. Schafft, D. A. Baglee, and P. E. Kennedy. 1991, 7p

Contract ARPA-3882

Sponsored by Defense Advanced Research Projects Agency, Arlington, VA.

Pub. in Proceedings of International Reliability Physics Symposium, Las Vegas, NV., April 9-11, 1991, p1-7.

PB91-216739

(Order as PB91-216705, PC A07/MF A01) National Inst. of Standards and Technology, Gaithersburg, MD.

Automated Reverse-Bias Second-Breakdown

Transistor Tester.
D. Berning. 1991, 14p
Included in Jnl. of Research of the National Institute of Standards and Technology, v96 n3 p291-304 May/Jun

Not available NTIS PB91-236513 National Inst. of Standards and Technology (EEEL), Gaithersburg, MD. Semiconductor Electronics Div. **Automated** Reverse-Bias Second-Breakdown Transistor Tester. Final rept.

D. W. Berning, 1991, 8p

Pub. in Proceedings of Applied Power Electronics Conference and Exposition, Dallas, TX., March 10-15, 1991, p339-346.

PB91-236703 Not available NTIS National Inst. of Standards and Technology (CSL), Gaithersburg, MD. Systems and Software Technology Div.

Emitter Baliasting Resistor Design for, and Current Handling Capability of AlGaAs/GaAs Power Heterojunction Bipolar Transistors.

Final rept. G. Gao, M. S. Unlu, H. Morkoc, and D. L. Blackburn. 1991, 12p

Pub. in IEEE (Institute of Electrical and Electronics Engineers) Transactions on Electron Device 38, n2 p185-196 Feb 91.

PB91-237255 Not available NTIS National Inst. of Standards and Technology (NEL), Boulder, CO. Electromagnetic Fields Div.

Microwave Monoiithic Integrated Circuit-Related Metrology at the National Institute of Standards and Technology. Final rept.

G. R. Reeve, R. Marks, and D. L. Blackburn. 1990,

Pub. in IEEE (Institute of Electrical and Electronics Engineers) Transactions on Instrumentation and Measurement 39, n6 p958-961 Dec 90.

PB91-240739 PC A03/MF A01 National Inst. of Standards and Technology (EEEL), Gaithersburg, MD.

Metrology for the Semiconductor industry. R. I. Scace, Sep 91, 47p NISTIR-4653

PB92-116466 Not available NTIS National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Scientific Computing Div. Three-Dimensional Simulations of High-Resolution Photoresist Processing.

Final rept. E. Barouch, B. Bradie, and H. A. Fowler. 1991, 12p Sponsored by Defense Advanced Research Projects Agency, Arlington, VA., and Air Force Office of Scientific Research, Bolling AFB, DC.

Pub. in Jnl. of Imaging Science 35, n4 p240-251 Jul/ Aug 91.

42

### **Semiconductor Devices**

PB92-116599 Not available NTIS National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Semiconductor Electronics Div. Ellipsometry SRM's for Use In Thin Film Measurements.

Final rept.

D. Chandler-Horowitz, J. F. Marchiando, and B. J.

Belzer. 1990, 11p Pub. in Proceedings of Measurement Science Conference, Anaheim, CA., February 8-9, 1990, p5A-11-5A-

PB92-116607 Not available NTIS National Inst. of Standards and Technology (NEL),
Gaithersburg, MD. Semiconductor Electronics Div.
Sensitivity of Ellipsometric Modeling to the 'Islands' of Silicon Precipitates at the Bottom of the Burled Oxide Layer in Annealed SIMOX. Final rept.

D. Chandler-Horowitz, J. F. Marchiando, M. Doss, S. Krause, and S. Visitserngtrakul. 1990, 2p Pub. in Proceedings of IEEE SOS/SOI Technology Conference, Key West, FL., October 2-4, 1990, p73-74.

PB92-116664 Not available NTIS National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Semiconductor Electronics Div.
Modified Silding Wire Potentiometer Test Structure for Mapping Nanometer-Level Distances. Final rept.

M. W. Cresswell, M. Gaitan, R. A. Allen, and L. W.

Linholm. 1991, 6p
Pub. in Proceedings of IEEE (Institute for Electrical and Electronics Engineering) International Conference on Microelectronic Test Structures, Kyoto, Japan, March 18-20, 1991, v4 n1 p129-134.

PB92-116862 Not available NTIS National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Semiconductor Electronics Div. Experimentally Verified IGBT Model Implemented In the Saber Circuit Simulator. Final rept.

A. R. Hefner, and D. M. Diebolt. 1991, 10p Pub. in Proceedings of Annual IEEE (Institute for Electrical and Electronics Engineers) Power Electronics Specialists Conference (22nd), Cambridge, MA., June 24-27, 1991, p10-19.

Not available NTIS PB92-116920 National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Semiconductor Electronics Div. Test Chip for the Evaluation of Surface-Diffusion Phenomena in Sputtered Aluminum Pianarization Processes.

Final rept. M. A. Jones, J. A. Roberts, C. H. Ellenwood, M. W. Cresswell, and R. A. Allen. 1991, 6p Pub. in Proceedings of IEEE (Institute for Electrical and

Electronics Engineers) International Conference on Microelectronic Test Structures, Kyoto, Japan, March 18-20, 1991, v4 n1 p35-40.

Not available NTIS PB92-116979 National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Semiconductor Electronics Div.
Knowledge Extraction Techniques for Expert
System Assisted Wafer Screening. Final rept.

D. Khera, M. W. Cresswell, L. W. Linholm, G. Ramanathan, J. Buzzeo, and A. Nagarajan. 1990, 6p Pub. in Proceedings of International Semiconductor Manufacturing Science Symposium, Burlingame, CA., May 21-23, 1990, p44-49.

Not available NTIS PB92-116987 National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Semiconductor Electronics Div.

Assessment of Reliability Concerns for Wide-Temperature Operation of Semiconductor Devices and Circuits. Final rept.

J. J. Kopanski, D. L. Blackburn, G. G. Harman, and

D. W. Berning. 1991, 6p Sponsored by National Aeronautics and Space Adminstration, Cleveland, OH. Lewis Research Center.
Pub. in Proceedings of International High Temperature
Electronics Conference (1st), Albuquerque, NM., June
16-20, 1991, p137-142 1991.

PB92-117084 Not available NTIS National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Semiconductor Electronics Div. Persistent Photoconductivity in SIMOX Films. Final rept.

Final rept.

S. Mayo, J. R. Lowney, P. Roitman, and D. B. Novotny. 1990, 2p
Contract DNA-IACRO-88-800
See also PB91-112409. Sponsored by Defense Nuclear Agency, Washington, DC.
Pub. in Proceedings of IEEE SOS/SOI Technology Conference, Key West, FL., October 2-4, 1990, p156-157

PB92-117159 Not available NTIS National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Semiconductor Electronics Div. Band-Gap Narrowing and III-V Heterostructure Final rept.

D. R. Myers, J. A. Lott, J. R. Lowney, J. F. Klem, and C. P. Tigges. 1990, 4p

See also DE91000401. Pub. in Proceedings of International Electron Devices Meeting, San Francisco, CA., December 9-12, 1990, p31.1.1-31.1.4.

PB92-117217 Not available NTIS National Inst. of Standards and Technology (NEL), Application of Transmission Engineering Div.

Application of Transmission Electron Detection to X-ray Mask Calibrations and inspection.

Final rept. M. T. Postek, R. D. Larrabee, W. J. Keery, and E. Marx. 1991, 13p

Pub. in Proceedings of SPIE (Society of Photo-Optical Instrumentation Engineers) - Integrated Circuit Metrol-ogy, Inspection, and Process Control V, v1464 p35-47 1991.

Not available NTIS National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Semiconductor Electronics Div. Residual Defects in SIMOX: Threading Dislocations and Pipes.

Final rept.
P. Roitman, M. Edelstein, S. Krause, and S. Visitserngtrukul. 1990, 2p
Contract DNA-IACRO-88-800

Sponsored by Defense Nuclear Agency, Washington,

Pub. in Proceedings of IEEE SOS/SOI Technology Conference, Key West, FL., October 2-4, 1990, p154-

PB92-117241 Not available NTIS Not available NTIS National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Semiconductor Electronics Div. Round-Robin Study of Implants in SI and SIO2 by SIMS, RBS, and NAA.

P. Roitman, D. S. Simons, P. H. Chi, R. M. Lindstrom, G. E. Lux, S. Baumann, S. W. Novak, R. G. Wilson, D. Farrington, J. Keenan, F. A. Stevie, J. L. Moore, R. B. Irwin, A. J. Filo, C. W. Magee, R. Alcorn, and D. File. 1990, 3p

Pub. in Proceedings of International Conference on Secondary Ion Mass Spectrometry (SIMS VII) (7th), Monterey, CA., September 3-8, 1989, p115-117 1990. PB92-117282 Not available NTIS National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Semiconductor Electronics Div. Measurement, Use, and interpretation of TCR. Final rept.

H. A. Schafft. 1991, 7p

Pub. in Proceedings of International Wafer Level Reliability Workshop, Lake Tahoe, CA., October 7-10, 1990, p211-217 1991.

#### General

PB91-132241 PC A06/MF A01 National Inst. of Standards and Technology (NEL), Boulder, CO. Electromagnetic Fields Div. Bibliography of the NIST Electromagnetic Fields Division Publications. R. M. Lyons, and K. A. Gibson. Aug 90, 104p NISTIR-3945 Supersedes PB90-163635.

PB91-132266 PC A04/MF A01 National Inst. of Standards and Technology (NEL), Boulder, CO. Electromagnetic Technology Div Metrology for Electromagnetic Technology: A Bibliography of NIST Publications. M. E. DeWeese. Aug 90, 66p NISTIR-3946 Supersedes PB90-161670.

PB91-133868 Not available NTIS National Inst. of Standards and Technology (NEL), Boulder, CO. Electromagnetic Technology Div. Eddy Current Probe Characterization Using an Impedance Plane Display instrument.

T. E. Capobianco. 1989, 9p

Sponsored by Army Materials Technology Lab., Watertown, MA.

Pub. in Proceedings of Defense Conference on Nondestructive Testing (38th), San Antonio, TX., October 31-November 2, 1989, p193-201.

Not available NTIS PB91-134213 National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Electricity Div.

Transition from Trichei-Pulse Corona to Dielectric Barrier Discharge.

Final rept.

S. V. Kulkarni, R. J. Van Brunt, and V. K. Lakdawala. 1990, 8p

Sponsored by Department of Energy, Washington, DC.

Div. of Electric Energy Systems.

Pub. in Proceedings of Annual Report Conference on Electrical Insulation and Dielectric Phenomena, Pocono Manor, PA., October 28-31, 1990, p267-274.

PB91-134528 Not available NTIS National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Electricity Div. Collisional Electron-Detachment and ion-Conversion Processes in SF6.

Final rept. J. K. Olthoff, R. J. Van Brunt, Y. Wang, L. D. Doverspike, and R. L. Champion. 1990, 16p Sponsored by Department of Energy, Washington, DC. Pub. in Nonequilibrium Effects in Ion and Electron Transport, p229-244 1990.

Not available NTIS PB91-134684 National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Electricity Div.

### General

Electrical Breakdown and Streamer Statistics in Nhexane under Uniform Fleld Conditions.

K. L. Stricklett, E. F. Kelley, H. Yamashita, H. Kawai, and C. Fenimore. 1990, 4p

Sponsored by Department of Energy, Washington, DC. Office of Energy Storage and Distribution.

Pub. in Proceedings of IEEE (Institute of Electrical and Electronics Engineers) International Symposium on Electrical Insulation, Toronto, Canada, June 3-6, 1990, p61-64.

PB91-134916 Not available NTIS National Inst. of Standards and Technology (NEL),

Boulder, CO. Electromagnetic Fields Div.

Dual Six-Port Reflectometer Systems Using Waveguide in the Frequency Range 18-50 GHz. Final rept.

C. M. Weil, F. E. Marler, J. R. Major, M. F. Weidman,

and D. H. Russell. 1989, 13p Pub. in ARFTG Conference Digest (33rd), Long Beach, CA., June 15-16, 1989, p76-88.

PR91-135020 Not available NTIS National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Electricity Div. Effect of High Pressure on Prebreakdown Phe-

nomena in n-Hexane.

Final rept.

H. Yamashita, H. Kawai, K. L. Stricklett, and E. F.

Kelley. 1990, 6p

Sponsored by Department of Energy, Washington, DC. Pub. in Proceedings of International Conference on Conduction and Breakdown in Dielectric Liquids (10th), Grenoble, France, September 10-14, 1990, p404-409.

PB91-147223 Not available NTIS National Inst. of Standards and Technology (NEL), Boulder, CO. Electromagnetic Technology Div. High Speed Magnetic Field Sensors Based on Iron Garnets. Final rept.

M. N. Deeter, A. H. Rose, and G. W. Day. 1990, 2p Pub. in Proceedings of AFCEA Department of Defense Fiber Optics Conference, McLean, VA., March 20-23, 1990, p423-424.

Not available NTIS National Bureau of Standards (NEL), Gaithersburg, MD. Precision Engineering Div.

Determination of Fields Near a Silver Strip on a

Glass Substrate.

Final rept. E. Marx, and E. C. Teague. 1988, 9p Pub. in Proceedings of SPIE (Society of Photo-Optical Instrumentation Engineers) - Scanning Microscopy Technologies and Applications, v897 p176-184 1988.

Not available NTIS PB91-148676 National Inst. of Standards and Technology (NEL), Boulder, CO. Electromagnetic Technology Div.
Integrity Tests for High-(T sub c) and Conventional
Critical-Current Measurement Systems. Final rept.

Sponsored by Department of Energy, Washington, DC.
Pub. in Advances in Cryogenic Engineering (Materials). als), v36 ptA p43-50 1990.

PB91-158816 Not available NTIS National Bureau of Standards (NEL), Gaithersburg, MD. Chemical Process Metrology Div.

Surface Acoustical Wave Spectroscopy for High **Humidity Sensing.** Final rept.

P. H. Huang. 1987, 5p

Pub. in Proceedings of International Conference on Solid-State Sensors and Actuators (4th), Tokyo, Japan, June 2-5, 1987, p462-466.

PB91-161919 Not available NTIS National Inst. of Standards and Technology (NEL), Boulder, CO. Electromagnetic Fields Div.
Improved Technique for Determining Complex

Permittivity with the Transmission/Reflection Method.

Final rept.

J. Baker-Jarvis, E. J. Vanzura, and W. A. Kissick.

1990, 8p Pub. in IEEE (Institute of Electrical and Electronics Engineers) Transactions on Microwave Theory and Techniques 38, n8 p1096-1103 Aug 90.

PB91-161992 Not available NTIS National Inst. of Standards and Technology (NEL),

Boulder, CO. Electromagnetic Fields Div.
TEM/Reverberating Chamber Design/Concept
Study: A Single Facility for Large System Radiated
EMC Testing, 10 kHz - 40 Ghz.

Final rept.

M. L. Crawford. 1989, 15p
Pub. in Proceedings of EMC EXPO Conference
Record, Washington, DC., August 1-3, 1989, 15p.

PB91-162362 Not available NTIS National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Electricity Div. Cutting the High Cost of Testing. Final rept.

T. M. Souders, and G. N. Stenbakken. 1991, 4p Pub. in IEEE (Institute of Electrical and Electronics Engineers) Spectrum, p48-51 Mar 91.

Not available NTIS PB91-162370 National Bureau of Standards (NEL), Boulder, CO. Electromagnetic Fields Div. Intercomparison of NBS Noise Calibration Services.

Final rept. D. F. Wait, W. C. Daywitt, and G. Counas. 1988, 2p Pub. in Proceedings of Conference on Precision Electromagnetic Measurements 'CPEM '88 Digest', Tsukuba, Ibaraki, Japan, June 7-10, 1988, p209-210.

PB91-171959 PC A08/MF A01 National Inst. of Standards and Technology (NEL), Boulder, CO. Electromagnetic Fields Div. Transmission/Reflection and Short-Circuit Line Permittivity Measurements.

Technical note. J. Baker-Jarvis. Jul 90, 156p NIST/TN-1341 Also available from Supt. of Docs. as SN003-003-03058-9

PB91-175240 Not available NTIS National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Electrosystems Div.
Recent Developments In Digital Oscilloscopes. Final rept.

H. K. Schoenwetter, 1989, 2p

Pub. in Proceedings of IEEE (Institute of Electrical and Electronics Engineers) Instrumentation and Measurement Technology Conference, Washington, DC., April 25-27, 1989, p154-155.

PB91-175356 Not available NTIS National Bureau of Standards (NEL), Boulder, CO. Electromagnetic Fields Div. Lattice Approach to Environments Irradiated by Unknown Sources.

Final rept.

J. Randa, and M. Kanda. 1987, 5p Pub. in Proceedings of the International Zurich Symposium and Technical Exhibition on Electromagnetic Compatibility (7th), Zurich, March 3-5, 1987, p191-195.

PB91-175398 Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Electricity Div. Measurements of Power Frequency Magnetic Fields Away from Power Lines. Final rept.

M. Misakian, J. M. Silva, and R. S. Baishiki. 1991,

Pub. in IEEE (Institute of Electrical and Electronics Engineers) Transactions on Power Delivery 6, n2 p901-911 Apr 91.

PC A03/MF A01 National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Center for Electronics and Electri-

Center for Electronics and Electronics and Electronics and Electronics and Electronics and Electronics and Electronics Technical Publication Announcements Covering Center Programs, July to September 1990, with 1991 CEEE Events Calendar.

J. A. Gonzalez. Apr 91, 31p NISTIR-4537 See also PB90-206491.

PB91-189290 Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Electricity Div. Measurement Reliability: The Detection of Nonlin-

earltles.

C. P. Fenimore, and G. J. FitzPatrick. 1991, 6p Sponsored by Defense Nuclear Agency, Washington, DC.

Pub. in Proceedings of Space Nuclear Power Systems Symposium (8th), Albuquerque, NM., January 7-10, 1991, p1113-1118.

PB91-189308 Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Electricity Div. Incompatibility between the 100/1300 Surge Test and Varistor Fallure Rates.

Final rept.

C. P. Fenimore, and F. D. Martzloff. 1991, 6p Pub. in Proceedings of International Zurich Symposium (9th), and Technical Exhibition on Electromagnetic Compatibility, Zurich, Switzerland, March 12-14, 1991, p525-530.

PB91-189811 Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Electricity Div.

Real, Realistic Ring Waves for Surge Testing. Final rept.

F. D. Martzloff, and G. Pellegrini. 1991, 6p Pub. in Proceedings of the International Zurich Symposium and Technical Exhibition on Electromagnetic Compatibility (9th), Zurich, Switzerland, March 12-14, 1991, p499-504.

PB91-202895 Not available NTIS National Bureau of Standards (NEL), Boulder, CO. Electromagnetic Fields Div.

TEM Driven Reverberating Chamber, a Single Facility for Radiated EMS/V Testing, 10 kHz - 18 GHz. Final rept.

M. L. Crawford, 1987, 11p

Pub. in Proceedings of International Conference on Electromagnetic Compatibility EMC EXPO 87, San Diego, CA., May 19-21, 1987, pT11.18-T11.28.

PB91-203885 Not available NTIS National Inst. of Standards and Technology (NEL), Boulder, CO. Electromagnetic Fields Div. Simultaneous versus independent injection Testing of Nonlinear Multiport Systems. Final rept. J. Randa. 1991, 4p

Pub. in Proceedings of International Zurich Symposium and Technical Exhibition on Electromagnetic Compatibility (9th), Zurich, Switzerland, March 12-14, 1991,

PB91-236844 Not available NTIS National Inst. of Standards and Technology (EEEL), Boulder, CO. Electromagnetic Fields Div.

Improved Technique for Measuring Permittivity of Thin Dielectrics with a Cylindrical Resonant Cavity. Final rept.

M. D. Janezic, and J. H. Grosvenor. 1991, 5p Sponsored by Department of the Navy, Washington, DC.

Pub. in Proceedings of IEEE (Institute of Electrical and Electronics Engineers) Instrumentation and Measurement Technology Conference Enhancing Productivity with Instrumentation and Measurement Technologies, Atlanta, GA., May 14-16, 1991, p580-584.

PB91-237214 Not available NTIS Not available NTS
National Inst. of Standards and Technology (EEEL),
Gaithersburg, MD. Electricity Div.
Precision Qualification of Watthour Meters.

J. D. Ramboz, C. Fenimore, and S. B. Schiller. 1991,

4p
Pub. in IEEE (Institute of Electrical and Electronics Engineers) Transactions on Instruments and Measurement 40, n2 p406-409 Apr 91.

PB91-237222 Not available NTIS National Inst. of Standards and Technology (NEL), Boulder, CO. Electromagnetic Fields Div.
Theoretical Considerations for a Thermo-Optic Microwave Electric-Field-Strength Probe.

J. Randa. 1990, 8p Sponsored by Naval Ocean Systems Center, San Diego, CA.

Pub. in Jnl. of Microwave Power and Electromagnetic Energy 25, n3 p133-140 1990.

PB91-237644 Not available NTIS

Not available NTIS
National Inst. of Standards and Technology (EEEL),
Gaithersburg, MD. Electricity Div.
Influence of Memory Propagation on Phase-Resolved Stochastic Behavior of AC-Generated Partial Discharges.

Final rept. Final rept.

R. J. Van Brunt, and E. W. Cernyar. 1991, 3p
Sponsored by Department of Energy, Washington, DC.
Office of Energy Storage and Distribution.

Pub. in Applied Physics Letters 58, n23 p2628-2630,

10 Jun 91.

PB91-237776 Not available NTIS National Inst. of Standards and Technology (EEEL), Boulder, CO. Electromagnetic Fields Div. Translate LRL and LRM Calibrations. Final rept.

D. Williams, R. Marks, and K. Phillips. 1991, 5p Pub. in Microwaves and RF 30, n2 p78, 80-82 and 84, Feb 91.

PC A03/MF A01 National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Center for Electronics and Electri-

Cal Engineering.
Center for Electronics and Electrical Engineering
Technical Publication Announcements Covering
Center Programs, October to December 1990, with
1991 CEEE Events Calendar.

J. A. Gonzales. Aug 91, 32p NISTIR-4645 See also PB90-265232 and PB91-184754.

PB92-112309 PC A03/MF A01 National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Semiconductor Electronics Div. Electronics and Electrical Engineering Laboratory Technical Publication Announcements Covering Laboratory Programs, January to March 1991, with **1991 EEEL Events Calendar.**J. A. Gonzalez. Sep 91, 20p NISTIR-4675
See also PB91-240838.

PB92-112325 PC A03/MF A01 National Inst. of Standards and Technology, Boulder, CO.

Optimization Techniques for Permittivity and Permeability Determination.

P. D. Domich, J. Baker-Jarvis, and R. G. Geyer. Jun 91, 23p NISTIR-4571

PB92-116367 PC A06/MF A02 National Inst. of Standards and Technology (EEEL), Boulder, CO. Electromagnetic Technology Div. Bibliography of the NiST Electromagnetic Fields Division Publications.

R. M. Lyons, and K. A. Gibson. Aug 91, 108p NISTIR-3973

Supersedes PB91-132241,

PB92-116375 PC A04/MF A01 National Inst. of Standards and Technology (EEEL), Boulder, CO. Electromagnetic Technology Div. Metrology for Electromagnetic Technology: A Bibilography of NiST Publications. M. E. DeWeese. Aug 91, 69p NiSTIR-3972 Supersedes PB91-132266.

PB92-116516 Not available NTIS National Inst. of Standards and Technology (NEL), Boulder, CO. Electromagnetic Technology Div. Voltage Calibration Systems Using Josephson Junction Arrays.

Final rept. C. J. Burroughs, and C. A. Hamilton. 1990, 4p
Pub. in IEEE (Institute for Electrical and Electronics
Engineers) Transactions on Instrumentation and
Measurement 39, n6 p972-975 Dec 90.

PB92-117167 Not available NTIS National Inst. of Standards and Technology (EEEL), Gaithersburg, MD. Electricity Div. influence of Nonsinusoidal Waveforms on Voitmeters, Ammeters, and Phase Meters. Final rept. N. M. Oldham, and T. L. Nelson. 1991, 6p Pub. in Proceedings of IEEE (Institute for Electrical and

Electronics Engineers) Winter Power Meeting, New York City, NY., February 3-7, 1991, p7-12.

PB92-123082 PC A03/MF A01 National Inst. of Standards and Technology (EEEL), Gaithersburg, MD. Electronics and Electrical Engineering Laboratory. 1991 Strategic Plan. Supporting Technology for U.S. Competitiveness in Electronics. R. M. Powell. Nov 91, 38p NISTIR-4714 See also PB92-112309.

PB92-126663

(Order as PB92-126614, PC A06/MF A02) National Inst. of Standards and Technology, Boulder, CO.

Optimization Techniques for Permittivity and Permeability Determination.

P. D. Domich, J. Baker-Jarvis, and R. G. Geyer. 1991, 11p

Included in Jnl. of Research of the National Institute of Standards and Technology, v96 n5 p565-575 Sep/Oct

### **ENERGY**

#### **Electric Power Transmission**

Not available NTIS National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Electricity Div.

Evaluation of Instrumentation Used to Measure AC Power System Magnetic Fields.

M. Misakian, 1991, 11p

Pub. in IEEE (Institute of Electrical and Electronics Engineers) Transactions on Power Delivery 6, n1 p1-11 Jan 91.

PB91-216770 PC A04/MF A01 National Inst. of Standards and Technology (EEEL), Gaithersburg, MD.

NIST Measurement Services: Calibration Service for Current Transformers.

Special pub. (Final).

J. D. Ramboz, and O. Petersons. Jun 91, 62p NIST/ SP-250/36

Also available from Supt. of Docs. as SN003-003-03087-2.

PB92-112341 PC A06/MF A02 National Inst. of Standards and Technology (EEEL), Gaithersburg, MD. Electricity Div.

Research for Electric Energy Systems: An Annual Report.

Annual rept. 1990.

W. E. Anderson. Jun 91, 105p NISTIR-4691

See also report for 1989, PB90-228032. Sponsored by Department of Energy, Washington, DC. Div. of Electric Energy Systems.

#### **Fuel Conversion Processes**

PB91-134940 Not available NTIS National Inst. of Standards and Technology (IMSE), Gaithersburg, MD. Ceramics Div.

Effect of Slag Penetration on the Performance of Magnesia Chrome Refractories in Siagging Gasifiers.

Final rept.

S. M. Wiederhorn, R. F. Krause, J. Sun, and G. V. Sklizkov. 1987, 8p

Sponsored by Department of Energy, Oak Ridge, TN. Fossil Energy Program.

Pub. in Proceedings of Symposium on Materials for Coal Gasification, Cincinnati, OH., October 10-15, 1987, p121-128.

PB91-158592 Not available NTIS National Bureau of Standards (IMSE), Gaithersburg, MD. Ceramics Div.

Rapporteur's Summary Materials Development for Coal Gasification.

Final rept.

S. J. Dapkunas. 1987, 3p

Pub. in Proceedings of ASM Conference on Materials for Coal Gasification, Cincinnati, OH., October 10-15, 1987, p183-185.

#### **Fuels**

#### **Fuels**

AD-A242 816/7 PC A03/MF A01 National Inst. of Standards and Technology, Gaithers-Short-Duration Autoignition Temperature Meas-

urements for Hydrocarbon Fuels.
Final rept. May 89-Sep 90.
K. C. Smyth, and N. P. Bryner. Jan 91, 49p AFESC/ ESL-TR-90-43,

PB91-133942 Not available NTIS National Bureau of Standards (NML), Gaithersburg, MD. Chemical Thermodynamics Div. MSW Caiorimetry. Final rept.

E. S. Domalski, K. L. Churney, A. E. Ledford, and M. L. Reilly. 1986, 4p

Pub. in Mechanical Engineering, p32-35 Aug 86.

PB91-134403 Not available NTIS Mational Bureau of Standards (NEL), Gaithersburg, MD. Chemical Process Metrology Div.

Gas Flow Measurement: Calibration Facilities and

Fluid Metering Traceability at the National Bureau of Standards.

Final rept.

G. E. Mattingly. 1987, 24p Pub\_ in Natural Gas Energy Measurement, p219-242 1987.

PB91-147025 Not available NTIS Not available (NML), National Inst. of Standards and Technology (NML), Boulder, CO. Chemical Engineering Science Div. Experimental Evaluation of Selected Orifice Flowmeter Upstream installations.

J. A. Brennan, C. F. Sindt, and M. A. Lewis. 1990, 9p Sponsored by Gas Research Inst., Chicago, IL. Pub. in Proceedings of American Gas Association Distribution/Transmission Conference, Los Angeles, CA., May 7-9, 1990, p594-602.

PB91-148791 Not available NTIS National Inst. of Standards and Technology (NML), Boulder, CO. Chemical Engineering Science Div. Effect of Tube Bundle Flow Conditioners on Orifice Meter Discharge Coefficients.

Final rept. K. M. Kothari, J. A. Brennan, and J. Gorter. 1990, 9p Sponsored by Gas Research Inst., Chicago, IL. Pub. in Proceedings of International Gas Research Conference, Tokyo, Japan, November 6-9, 1989, p541-549 1990.

PB91-162214 Not available NTIS National Bureau of Standards (NEL), Boulder, CO. Thermophysics Div.

Speed of Sound of Natural Gas Mixtures.
Final rept.

Pub. in Proceedings of International Symposium on Fluid Flow Measurement, Arlington, VA., November 16-19, 1986, 7p.

Not available NTIS PB91-162271 National Inst. of Standards and Technology (MSEL), Gaithersburg, MD. Polymers Div. Bioprocessing of Fossii Fuels Using Hyperthermo-

philic Archaebacteria. Final rept.

G. J. Olson, T. L. Peeples, I. I. Blumentals, R. N. Schicho, and S. H. Brown, 1989, 16p Pub. in Proceedings of Symposium on Biological Processing of Coal and Coal-Derived Substances, Palo Alto, CA., May 15-19, 1989, p2-53-2-68.

Not available NTIS PB91-175299 National Bureau of Standards (NEL), Gaithersburg, MD. Applied and Computational Mathematics Div.

Gas Analysis Modeling System. Final rept.

R. P. O'Neill, W. G. Kurator, B. Mariner-Volpe, W. A. Trapmann, and J. Heinkel. 1984, 19p Pub. in Analytic Techniques for Energy Planning, p265-

283 1984.

PB91-195339 Not available NTIS National Bureau of Standards (IMSE), Gaithersburg, MD. Polymers Div.

Recent Progress in Coal Bioprocessing Research in the United States: Scope and Areas Needing Further Research.

Final rept.

G. J. Olson. 1988, 7p Pub. in Conservation and Recycling 1, n3-4 p319-325

Aug 88.

PB91-203323 Not available NTIS Noticonal Inst. of Standards and Technology (IMSE), Gaithersburg, MD. Polymers Div. Biological Sulfur Oxidation and Reduction for Coal Suifur Speciation and Desulfurization.

Final rept. R. M. Kelly, R. N. Schicho, S. H. Brown, J. P. Soisson, I. I. Blumentals, G. J. Olson, and E. J.

Parks. 1989, 15p

Pub. in Proceedings of the Annual EPRI (Electric Power Research Institute) Conference (13th) on Fuel Science and Conversion, Santa Clara, CA., May 18-19, 1988, p7-3-7-17 1989.

PC A03/MF A01 PB92-108927 National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Center for Fire Research. Short-Duration Autoignition Temperature Measurements for Hydrocarbon Fuels.
K. C. Smyth, and N. P. Bryner. Dec 90, 48p NISTIR-4469

Contract JON-2104-3039 See also AD-778 998. Sponsored by Air Force Engineering and Services Center, Tyndall AFB, FL.

**Heating & Cooling Systems** 

Not available NTIS PB91-134221 National Bureau of Standards (NEL), Gaithersburg, MD. Building Physics Div.

Method for Measuring Heat Loss from Underground Heat Distribution Systems. Final rept.

T. Kusuda, J. B. Fang, and W. M. Ellis. 1987, 17p Pub. in Thermal Insulation: Materials and Systems, ASTM STP 922, p52-68 1987.

PC A05/MF A01 National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Center for Building Technology. Computer Program for Simulation of HVAC/Lighting interactions: initial Report.
G. N. Walton. Dec 90, 99p NISTIR-4472

Sponsored by Department of Energy, Washington, DC., and Electric Power Research Inst., Palo Alto, CA.

PC A03/MF A01 PR91-144410 National Inst. of Standards and Technology (NML), Boulder, CO. Chemical Engineering Science Div. Effect of Nobie Gas Mixtures on the Performance of Regenerative-Type Cryocooiers Analytical Estimate.

D. E. Daney. Sep 90, 38p NISTIR-90/3936 Sponsored by Air Force Space Technology Center, Kirtland AFB, NM.

PB91-174516 Not available NTIS National Bureau of Standards (NEL), Gaithersburg, MD. Building Environment Div.

Research and Development of Heat Pumps Using Nonazeotropic Mixture Refrigerants.

Final rept.

J. M. Calm, and D. A. Didion. 1985, 8p Sponsored by Electric Power Research Inst., Palo Alto, CA.

Pub. in ASHRAE (American Society of Heating, Refrigerating and Air-Conditioning Engineers) Technical Data Bulletin, v1 n9 p132-139 Jun 85.

PB91-206706 PC A04/MF A01 National Inst. of Standards and Technology (BFRL), Gaithersburg, MD.

Measurement and Evaluation of Lighting/HVAC interaction.

S. J. Treado, and J. W. Bean. May 91, 55p NiSTiR-4429

PB92-126432 PC A07/MF A02 National Inst. of Standards and Technology, Gaithers-

Evaporator Performance Investigation for Residential Air-Conditioning Application Using Mixed Refrigerants.

M. Chwalowski. Nov 91, 148p NISTIR-4723 See also PB87-152286. Sponsored by Electric Power Research Inst., Palo Alto, CA. Nuclear Power Div.

PB92-126440 PC A04/MF A01 National Inst. of Standards and Technology, Gaithersburg, MD.

Testing and Rating of an Atmospheric, Gas-Fired Furnace Equipped with a Burner Air inlet Damper. S. T. Liu, G. E. Kelly, and C. P. Terlizzi. Nov 91, 61p NISTIR-4717

See also PB-289 484. Sponsored by Department of Energy, Washington, DC. Office of Conservation and Renewable Energy.

Policies, Regulations & Studies

PB91-147728 Not available NTIS National Bureau of Standards (NEL), Gaithersburg, MD. Office of Energy-Related Inventions. Feasibility of Using Knowledge-Based Systems for Aiding Inventors.

Final rept.

Pub. in Proceedings of the Annual Meeting of the Technology Transfer Society (11th), Indianapolis, IN., June 23-26, 1986, p1-12.

PB91-158659 Not available NTIS National Bureau of Standards (NEL), Gaithersburg, MD. Office of Energy-Related Inventions.

Evaluation of Building Systems inventions.

Final rept.

J. S. Dhillon, and T. A. Coultas. 1986, 4p Pub. in Proceedings of Conference on Energy: An Integrated Approach, Chattanooga, TN., April 30-May 2, 1986, p97-100.

PB91-167288 PC A03/MF A01 National Inst. of Standards and Technology (CAML), DISCOUNT-A Program for Discounting Computa-

tions in Life-Cycle Cost Analyses. User's Guide and Reference Manual.

Final rept.

S. R. Petersen. Jan 91, 22p NISTIR-4513 Prepared in cooperation with Federal Energy Management Program, Washington, DC.

### Policies, Regulations & Studies

PB91-507970 National Inst. of Standards and Technology (CAML), Gaithersburg, MD. Office of Applied Economics.

Building Life Cycle Cost Computer Program, Version 3.2 (for Microcomputers). Software.

Jul 91, 2 diskettes NIST/SW/DK-91/013 Supersedes PB90-501206 and PB90-501198. The software is on two 360K, 5 1/4 inch diskettes, double density. Documentation included; may be ordered separately as PB91-159764.

PB92-112515 PC A04/MF A01 National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Center for Computing and Applied

Energy Prices and Discount Factors for Life-Cycle Cost Analysis 1992. Annual Supplement to NIST Handbook 135 and NBS Special Publication 709.

B. C. Lippiatt. Oct 91, 63p NISTIR-85/3273-6
See also report for 1991, PB91-113613. Sponsored by Department of Energy, Washington, DC. Federal Energy Management Program Staff.

#### Reserves

N91-20219/2

(Order as N91-20207/7, PC A05/MF A01) National Bureau of Standards (IMSE), Gaithersburg,

Keivin Water-Drop Experiment.

R. D. Shull. Jan 90, 3p In NASA, Langley Research Center, National Educa-tors' Workshop: Update 1988. Standard Experiments in Engineering Materials Science and Technology p 51-53.

### Solar Energy

PB91-159152 Not available NTIS National Bureau of Standards (NEL), Gaithersburg,

MD. Building Equipment Div.

Method for Characterizing the Thermal Performance of a Solar Storage Wall from Measured Data. Final rept.

J. Seem, and E. Hancock. 1985, 12p

Sponsored by Department of Energy, Washington, DC. Passive and Hybrid Solar Energy Div.

Pub. in Proceedings of ASHRAE/DOE/BTECC Conference on Thermal Performance of the Exterior Envelopes of Buildings III, Clearwater Beach, FL., December 2-5, 1985, p1304-1315.

### General

PB91-178871 PC A09/MF A01 National Inst. of Standards and Technology, Gaithers-National Inst. of Standards and Technology, Gaithersburg, MD. Office of Energy-Related Inventions.
Energy Related Inventions Program: A Joint Program of the Department of Energy and the National Institute of Standards and Technology. Status Report for Recommendations 1 through 250.
Mar 91, 179p NISTIR-4533
Supersedes PB90-225988.

PB91-184770 PC A13/MF A02 National Inst. of Standards and Technology, Gaithersburg, MD. Office of Energy-Related Inventions.

Energy Related inventions Program. A Joint Program of the Department of Energy and the National Institute of Standards and Technology. Status Report for Recommendations 251 through 523. Mar 91, 298p NISTIR-4534 Supersedes PB90-221813.

### ENVIRONMENTAL **POLLUTION &** CONTROL

### Air Pollution & Control

Not available NTIS National Bureau of Standards (NML), Gaithersburg, MD. Chemical Thermodynamics Div.

Thermodynamic Data for Modeling of Fiue Gas
Cleanup Systems (Abstract for Poster Session).
Interim rept. Sep 86-Jun 87.
D. Garvin, M. W. Chase, and S. Abramowitz. 1987, 3р Contract DE-Al22-83PC60425 Sponsored by Department of Energy, Pittsburgh, PA.

Pittsburgh Energy Technology Center.
Pub. in Proceedings of Coal Utilization and Environmental Control Contractors' Review Meeting, Gaithersburg, MD., July 7-9, 1987, 3p.

PB91-167353 PC A03/MF A01 National Inst. of Standards and Technology (BFRL), Gaithersburg, MD.
Proposed Standard Practice for Assessing the
Performance of Gas-Phase Air Cleaning Equipment. S. Silberstein, Mar 91, 23p NISTIR-4523

PB91-175539 Not available NTIS National Bureau of Standards (NML), Gaithersburg, MD. Molecular Spectroscopy Div. infrared Spectroscopy Applied to Atmospheric Chemistry. Final rept.

A. G. Maki. 1985, 7p

1989

Pub. in Proceedings of CMA/NBS Workshop on Atmospheric Spectra, Gaithersburg, MD., November 3-4, 1983, p1-7 1985.

Not available NTIS

National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Building Environment Div. Multi-Zone Dispersal Analysis by Element Assembiy. Final rept. J. W. Axley. 1989, 18p Sponsored by Department of Energy, Washington, DC., Environmental Protection Agency, Washington, DC., and Consumer Product Safety Commission, Washington, DC. Pub. in Building and Environment 24, n2 p113-130

Not available NTIS PB91-195347 National Bureau of Standards (NML), Gaithersburg, MD. Inorganic Analytical Research Div.

Development of a New Tracer Technology Using Enriched Rare-Earth Isotopes. Final rept.

J. M. Ondov, and W. R. Kelly. 1988, 1p Pub. in Abstracts of Papers of the American Chemical Society 195, p84 Jun 88.

PB91-195420 Not available NTIS National Bureau of Standards (NEL), Gaithersburg, MD. Building Environment Div.

Air Exchange and Poliutant Concentration Measurements in Two Office Bulidings.

A. Persily, W. S. Dols, and R. Grot. 1988, 10p Sponsored by Geological Survey, Reston, VA., General Services Administration, Washington, DC. Pub. in Proceedings of CIB Conference Health Buildings '88, Stockholm, Sweden, September 1988, p591-

PB91-206722 PC A07/MF A01 National Inst. of Standards and Technology (BFRL), Gaithersburg, MD.

User Manual NBSAVIS CONTAM88, A User Interface for Air Movement and Contaminant Dispersal Analysis in Multizone Buildings.

R. A. Grot. Jun 91, 150p NISTIR-4585

Sponsored by Department of Energy, Washington, DC. Building Services Div., Consumer Product Safety Commission, Washington, DC. Directorate of Engineering Science, and Environmental Protection Agency, Research Triangle Park, NC. Atmospheric Research and Exposure Assessment Lab.

PB92-116805 Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Gas and Particulate Science Div. New Way to Mount Particulate Material for Laser Microprobe Mass Analysis. Final rept.

R. A. Fletcher, 1989, 4p

Pub. in Analytical Chemistry 61, n8 p914-917 1989.

PB92-126630

(Order as PB92-126614, PC A06/MF A02) National Inst. of Standards and Technology, Gaithersburg, MD.

Accurate and Precise Coulometric Determination of Sulfur Dioxide in Compressed Gas Mixtures.

G. D. Mitchell, and A. A. Bell. 1991, 6p Included in Jnl. of Research of the National Institute of Standards and Technology, v96 n5 p541-546 Sep/Oct

PB92-126648

(Order as PB92-126614, PC A06/MF A02) National Inst. of Standards and Technology, Gaithersburg, MD.

Development of a Coulometric Method for Assess-Ing the Concentration of Ambient Levels of CO2/ Air in Compressed Gas Mixtures.

G. D. Mitchell, and A. A. Bell. 1991, 4p

Included in Jnl. of Research of the National Institute of Standards and Technology, v96 n5 p547-550 Sep/Oct

### **Environmental Health & Safety**

PB92-116359 PC A07/MF A02 National Inst. of Standards and Technology (MEL), Gaithersburg, MD.

Response of Personal Noise Dosimeters to Continuous and impuise-Like Signais.

Technical note (Final). D. J. Evans, D. R. Flynn, V. Nedzelnitsky, and E. D. Burnett. Jun 91, 148p NIST/TN-1286

Also available from Supt. of Docs. as SN003-003-03116-0. See also PB80-176084 and PB86-109139. Sponsored by Occupational Safety and Health Administration, Washington, DC.

### INDUSTRIAL & MECHANICAL ENGINEERING

### **Solid Wastes Pollution & Control**

### Solid Wastes Pollution & Control

DE91018580 PC A09/MF A02 Institute of Paper Science and Technology, Atlanta, GA. Chemical Recovery Group.

Fundamental studies of black liquor combustion. Report No. 4, Phases, 2, 3, and 4: Final report, December 1987--December 1989.

Progress rept.

D. T. Clay, S. J. Lien, T. M. Grace, C. A. Brown, and H. L. Empie. Mar 90, 190p DOE/CE/40637-T9 Contract AC02-83CE40637

Sponsored by Department of Energy, Washington, DC.

PB91-147264 Not available NTIS National Bureau of Standards (NML), Gaithersburg, MD. Chemical Thermodynamics Div.

NBS Research Program In Municipal Solid Waste Combustion.

Final rept. 1 Oct 85-30 Jun 86. E. S. Domalski. 1986, 28p

Sponsored by Department of Energy, Washington, DC. Biofuels and Municipal Waste Technology Div.

Pub. in Proceedings of Biofuels and Municipal Waste Technology Division Management Review Meeting, Washington, DC., July 29-30, 1986, 28p.

PB91-174631 Not available NTIS National Bureau of Standards (NML), Gaithersburg, MD. Chemical Thermodynamics Div.

Monitoring the Fate of Chlorine from MSW Sampling through Combustion.

Final rept.

E. S. Domalski, K. L. Churney, A. E. Ledford, S. S. Bruce, T. J. Buckley, R. M. Parris, and S. N. Chesler. 1986, 14p

Pub. in Proceedings of Municipal Solid Waste as a Utility Fuel, Madison, WI., November 20-22, 1985, p16-1-16-14 1986.

#### Water Pollution & Control

PB91-195040 Not available NTIS National Inst. of Standards and Technology (IMSE), Gaithersburg, MD. Polymers Div.

Simultaneous Butyltin Determinations in the Microlayer, Water Column and Sediment of a Northern Chesapeake Bay Marina and Receiving System.

Final rept.

C. L. Matthias, S. J. Bushong, L. W. Hall, J. M. Bellama, and F. E. Brinckman. 1988, 6p Pub. in Appl. Organomet. Chem. 2, n6 p547-552 1988.

### **INDUSTRIAL &** MECHANICAL ENGINEERING

### **Hydraulic & Pneumatic Equipment**

Not available NTIS PB91-134411 National Bureau of Standards (NEL), Gaithersburg, MD. Chemical Process Metrology Div. Flowmeter Installation Effects: A New Approach to

an Old but Prevalent Problem. Final rept.

gow, June 9-12, 1986, p1-22.

G. E. Mattingly, and T. T. Yeh. 1986, 22p See also PB89-132856. Pub. in Proceedings of International Conference on Flow Measurement in the Mid 80's, East Kilbride, Glas-

PB91-134445 Not available NTIS National Inst. of Standards and Technology (NML), Boulder, CO. Chemical Engineering Science Div. Effect of the Location of an In-Line Tube Bundle on Orifice Flowmeter Performance.

Final rept. S. E. McFaddin, C. F. Sindt, and J. A. Brennan. 1989, 6p

Contract GRI-5081-353-0422 Sponsored by Gas Research Inst., Chicago, IL. Pub. in Flow Meas. Instrum. 1, p9-14 Oct 89.

PB91-147108 Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Center for Chemical Technology. Stabilization Techniques for Spinning Rotor Gage Residual Drag.

Final rept. S. H. Choi, S. Dittmann, and C. R. Tilford. 1990, 7p Sponsored by Department of Energy, Washington, DC.

Office of Fusion Energy.
Pub. in Jnl. of Vacuum Science and Technology A 8, n6 p4079-4085 Nov/Dec 90.

PB91-147488 Not available NTIS National Inst. of Standards and Technology (NML), Boulder, CO. Chemical Engineering Science Div. SHOOT Flowmeter and Pressure Transducers. Final rept.

A. Kashani, R. A. Wilcox, A. L. Spivak, D. E. Daney, and C. E. Woodhouse. 1990, 6p Pub. in Cryogenics 30, p286-291 Mar 90.

PC A04/MF A01 PB91-132282 National Inst. of Standards and Technology (MSEL), Boulder, CO. Materials Reliability Div. Data-Reduction and Analysis Procedures Used in NIST's Thermomechanical Processing Research. Y. W. Cheng, and C. L. Sargent. Aug 90, 68p NISTIR-3950

PB91-147272 Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Thermophysics Div. Study of the Linearity of Transfer Leaks and a Hellum Leak Detector.

Final rept. C. D. Ehrlich, S. A. Tison, H. Y. Hsiao, and D. B.

Ward. 1990, 6p
Pub. in Jnl. of Vacuum Science and Technology A 8, n6 p4086-4091 Nov/Dec 90.

PB91-158519 Not available NTIS National Bureau of Standards (NML), Gaithersburg, MD. Inorganic Materials Div. Levitation Calorimetry. Final rept.

D. W. Bonnell, R. L. Montgomery, B. Stephenson, P. C. Sundareswaran, and J. L. Margrave. 1988, 34p Sponsored by Rice Univ., Houston, TX. Dept. of Chem-

Pub. in Specific Heat of Solids, p265-298 1988.

PB91-159004 Not available NTIS National Inst. of Standards and Technology (MSEL), Gaithersburg, MD. Metallurgy Div. Mechanical Testing Revitalized.

Final rept.

L. Mordfin. 1990, 1p Pub. in Experimental Techniques 14, n5 p20 Sep/Oct

PB91-175067 Not available NTIS National Inst. of Standards and Technology (IMSE), Gaithersburg, MD. Ceramics Div. High-Resolution Small-Angle X-ray Scattering Camera for Anomalous Scattering. Final rept. G. G. Long, P. R. Jemian, J. R. Weertman, D. R. Black, H. E. Burdette, and R. Spal. 1991, 8p Sponsored by Department of Energy, Washington, DC. Pub. in Jnl. of Applied Crystallography 24, p30-37

Not available NTIS PB91-175216 National Inst. of Standards and Technology (MSEL), Boulder, CO. Fracture and Deformation Div. Jic Data Analysis with a 'Negative Crack Growth' Correction Procedure.

Final rept. Y. A. Rosenthal, R. L. Tobler, and P. T. Purtscher. 1990, 4p

Pub. in Jnl. of Testing and Evaluation 18, n4 p301-304 Jul 90.

#### General Laboratory & Test Facility Design & Operation

National Inst. of Standards and Technology (NEL), N91-21361/1

Not available NTIS

Gaithersburg, MD. Statistical Engineering Div. Replicate Measurements in the Interpretation of **Environmental Monitoring.** Final rept.

W. S. Liggett. 1990, 7p

PB91-189761

Pub. in Environmental Monitoring, Restoration, and Assessment (What Have We Learned), p249-255 1990.

(Order as N91-21331/4, PC A24/MF A03) National Inst. of Standards and Technology (NML), Gaithersburg, MD. Thermophysics Div.

High-Speed Spatial (Linear) Scanning Pyrometer: A Tool for Diagnostics, Temperature Mapping, and Property Determinations at High Temperatures. A. Cezairliyan, R. F. Chang, and G. M. Foley. 1 May

90, 5p In JPL, Proceedings of the First Workshop on Containerless Experimentation in Microgravity p 352-356.

PB91-175406 Not available NTIS Mational Bureau of Standards (NEL), Gaithersburg, MD. Mechanical Production Metrology Div. Eccentric Load Sensitivity of Force Sensors. Final rept. R. A. Mitchell, R. L. Seifarth, and C. P. Reeve. 1986,

Pub. in Mechanical Problems in Measuring Force and Mass, p275-281 1986.

PB91-187633

(Order as PB91-187617, PC A06/MF A01) National Inst. of Standards and Technology, Gaithersburg, MD.

### **INDUSTRIAL & MECHANICAL ENGINEERING** Laboratory & Test Facility Design & Operation

Use of the Electrostatic Classification Method to Size 0.1 micrometer SRM Particles: A Feasibility

P. D. Kinney, D. Y. H. Pui, G. W. Mulholland, and N. P. Bryner. 1991, 30p Sponsored by Minnesota Univ., Minneapolis.

Included in Jnl. of Research of the National Institute of Standards and Technology, v96 n2 p147-176 Mar/Apr

PB91-206730 PC A03/MF A01 National Inst. of Standards and Technology (BFRL), Gaithersburg, MD.

Calibration at 24C of a Heat-Flow-Meter Apparatus Having 610 mm Square Plates.
R. R. Zarr, and B. A. Licitra. May 91, 36p NISTIR-

4539 Sponsored by Department of Energy, Washington, DC.

Office of Buildings Energy R and D.

PB91-222646 PC A08/MF A02 National Inst. of Standards and Technology (TS), Gaithersburg, MD.

Directory of Accredited Laboratories, 1991. National Voluntary Laboratory Accreditation Program (NVLAP). Final rept. inal rept.

N. M. Trahey, V. R. White, and J. Horlick. Apr 91, 170p NIST/SP-810

Also available from Supt. of Docs. as SN003-003-03082-1, See also PB90-198920.

PB92-109024 PC A03/MF A01 National Inst. of Standards and Technology (CSTL), Gaithersburg, MD. Process Measurements Div. Procedure for the Effective Recalibration of Liquid-in-Glass Thermometers.

Special pub. (Final). J. A. Wise. Aug 91, 19p NIST/SP-819 Also available from Supt. of Docs. as SN003-003-

PB92-126416 PC A10/MF A03 National Inst. of Standards and Technology (TS), Gaithersburg, MD. Physical Measurement Services Program.

NIST Calibration Services Users Guide, 1991. Special pub.

J. D. Simmons. Oct 91, 221p NIST/SP-250 91ED Also available from Supt. of Docs. as SN003-003-03115-2. Supersedes PB89-200216. See also PB90-127820.

PB92-126655

(Order as PB92-126614, PC A06/MF A02) National Inst. of Standards and Technology, Gaithersburg, MD.

Certification of NIST SRM 1961: 30 micrometers Diameter Polystyrene Spheres.
A. W. Hartman, T. D. Doiron, and G. G. Hembree.

Included in Jnl. of Research of the National Institute of Standards and Technology, v96 n5 p551-563 Sep/Oct

PB92-126721

(Order as PB92-126614, PC A06/MF A02) Slovak Metrological Society, Bratislava (Czechoslovakia).

Siovak Metrological Society.

J. Mandak. 1991, 2p Included in Jnl. of Research of the National Institute of Standards and Technology, v96 n5 p621-622 Sep/Oct

PB92-163864 Not available NTIS National Inst. of Standards and Technology (TS), Gaithersburg, MD. Physical Measurement Services Program.

Modernized Metric System (Chart). Final rept. Aug 91, 1p NIST/SP-304-91-ED

PB92-163872 Not available NTIS National Inst. of Standards and Technology (TS), Gaithersburg, MD. Physical Measurement Services Program.

Brief History of Measurement Systems with a Chart of the Modernized Metric System.

Aug 91, 1p NIST/SP-304A-91-ED

PB92-163880 Not available NTIS National Inst. of Standards and Technology (TS), Gaithersburg, MD. Physical Measurement Services Program.

Metric Conversion Card.

Final rept.

J. D. Simmons. Aug 91, 1p NIST/SP-365-91-ED

PB92-163898 Not available NTIS National Inst. of Standards and Technology (TS), Gaithersburg, MD. Physical Measurement Services Metric Measures Up (Ruler).

Final rept. Aug 91, 1p NIST/SP-376-91-ED

Manufacturing Processes & Materials Handling

PB92-126457 PC A05/MF A01 National Inst. of Standards and Technology (MSEL), Gaithersburg, MD. Polymers Div.

Development of Test Methods to Determine the Compatibility of Liquid Hazardous Materials with Polyethylene Packagings.

Final rept. 11 Jun 90-31 Dec 91. J. M. Crissman, and M. A. Schen. Dec 91, 77p NISTIR-4729

Contract DTRS-56-90-X-70006 See also PB-280 215 and PB90-235417. Sponsored by Department of Transportation, Washington, DC. Office of Hazardous Materials Regulations.

Not available NTIS PB91-237305 National Inst. of Standards and Technology (IMSE), Boulder, CO. Fracture and Deformation Div.

Characterization of Capacitive Array for NDE Applications. Final rept.

P. J. Shull, A. V. Clark, P. R. Heyliger, J. C. Moulder, and B. A. Auld. 1990, 17p

Pub. in Research in Nondestructive Evaluation 2, p11-27 1990

PB91-237313 Not available NTIS National Bureau of Standards (IMSE), Boulder, CO. Fracture and Deformation Div.

Capacitive Array Sensors for Nondestructive Evaluation.

Final rept.

P. J. Shull, P. Heyliger, B. A. Auld, and A. V. Clark. 1988, 1p Pub. in Jnl. of Metals 40, n11 p112 1988.

PB91-237610 Not available NTIS National Inst. of Standards and Technology (MSEL),

Gaithersburg, MD. Materials Reliability Div.
Theory of Capacitive Probe Method for Noncontact Characterization of Dielectric Properties of Materials.

Final rept. V. K. Tewary, P. R. Heyliger, and A. V. Clark. 1991,

Pub. in Jnl. of Materials Research 6, n3 p629-638 Mar

Not available NTIS PB92-117423 National Inst. of Standards and Technology (MSEL), Gaithersburg, MD. Metallurgy Div. Advanced Sensing of Materials Processing.

Final rept. H. N. G. Wadley, A. H. Kahn, and W. L. Johnson.

1988, 10p Pub. in Materials Research Society Symposium Proceedings, v117 p109-118 1988.

### LIBRARY & INFORMATION SCIENCES

### **Nondestructive Testing**

PR91-187120

p1-11 1989.

National Inst. of Standards and Technology (IMSE), Boulder, CO. Fracture and Deformation Div. Eddy Current Reflection Probe: Theory and Experiment. Final rept. B. A. Auld, J. C. Moulder, S. Jefferies, P. J. Shull, and S. Ayter. 1989, 11p
Pub. in Research in Nondestructive Evaluation 1, n1

Not available NTIS

PB91-236562 Not available NTIS National Inst. of Standards and Technology (EEEL), Boulder, CO. Electromagnetic Technology Div.

Eddy Current Probe Sensitivity as a Function of Coli Construction Parameters. Final rept.

T. E. Capobianco, J. Splett, and H. Iyer. 1990, 18p Pub. in Res. Nondestr. Eval. 2, p169-186 1990.

### Information Systems

PR91-157123 PC A03/MF A01 National Inst. of Standards and Technology, Gaithersburg, MD. STEP On-Line information Service User's Guide. National PDES Testbed Report Series. S. Katz. 2 Jan 91, 25p NISTIR-4491 Supersedes PB91-143354.

PC A02/MF A01 PB91-159756 National Inst. of Standards and Technology, Gaithersburg, MD. National PDES Testbed Mall Server User's Guide. National PDES Testbed Report Series. S. Ressler. 31 Jan 91, 10p NISTIR-4508

PB91-167312 PC A04/MF A01 National Inst. of Standards and Technology (TS), Gaithersburg, MD.

### **LIBRARY & INFORMATION SCIENCES**

### Information Systems

NIST Standard Reference Data Products 1991 Catalog.

Special pub. M. W. Chase, and J. C. Sauerwein. Feb 91, 53p NIST/SP-782

Also available from Supt. of Docs. as SN003-003-03063-5. Supersedes PB90-219841.

PB91-189795 Not available NTIS National Bureau of Standards, Gaithersburg, MD. Office of Standards Code and Information.

Standardizing Standards. Final rept.

D. R. Mackay, 1988, 2p

Pub. in Visions of the Future, p45-46 1988.

PB92-109016 PC A07/MF A02 National Inst. of Standards and Technology (TS), Gaithersburg, MD. Information Resources and Services Div.

Data Bases Avallable in the Research Information Center of the National Institute of Standards and Technology.

Special pub. (Final).

D. Cunningham. Sep 91, 131p NIST/SP-818 Supersedes PB91-107284. Also available from Supt. of Docs. as SN003-003-03101-1.

PB92-126556 PC A03/MF A01 National Inst. of Standards and Technology (CSL), Gaithersburg, MD.

Gulde to Schema and Schema Extensibility. Final rept.

**Reference Materials** 

FIPS PUB 11-3

PB91-136507

Gaithersburg, MD.

B. K. Rosen, and I. des Fontaines, Nov 91, 35p. NIST/SP-500/197

Also available from Supt. of Docs. See also PB90-147919 and PB90-219866. Prepared in cooperation with Geological Survey, Reston, VA. Water Resources Div.

National Inst. of Standards and Technology (CSL),

Guldeline: American National Dictionary for Infor-

mation Systems. Category: Software; Subcategory: Documentation.
Federal information processing standards (Final).

S. M. Radack. c1991, 150p Supersedes FIPS PUB 11-2. Also pub. as American Standards Committee, New York rept. no. ANSI-X3.172-1990. Prepared in cooperation with American

Three ring vinyl binder also available: North American

National Bureau of Standards Publications 1977-1987. Volume 2. Indexes.

Special pub (Final rept. 1977-87)

R. Pardee, E. Gladden, and D. Harris. Aug 90, 1442p NIST/SP-790-VOL-2

Also available from Supt. of Docs. See also PB91-

PB91-148494 PC A03/MF A01 National Inst. of Standards and Technology, Gaithersburg, MD. Information Resources and Services Div Abstract and Index Collection in the Research Information Center of the National Institute of Standards and Technology (Fourth Edition). Special pub. (Final).

D. Cunningham. Dec 90, 36p NIST/SP-803 Also available from Supt. of Docs. as SN003-003-03056-2. Supersedes PB89-103790.

PB91-171330 PC A12/MF A02 National Inst. of Standards and Technology, Gaithersburg, MD. Office of Information Services. NIST Serial Holdings, 1991.

Special pub. (Final). M. L. Kingston. Feb 91, 268p NIST/SP-777 Also available from Supt. of Docs. as SN003-003-03075-9. Supersedes PB90-183245.

General

PB91-189522 Not available NTIS National Inst. of Standards and Technology (NCSL), Gaithersburg, MD. Systems and Software Technology

**Document Architecture for Open Systems.** 

Final rept.

PC E14

PC A99/MF A99

R. Hunter, P. Kaiiser, and F. Nielsen, 1989, 11p. Pub. in Computer Communications 12, n2 p69-79 Apr 89.

PB92-116383 PC A03/MF A01 National Inst. of Standards and Technology, Gaithersburg, MD.

Guide for the Use of the International System of **Units: The Modernized Metric System.** Special pub. (Final).

A. O. McCoubrey. Sep 91, 39p NIST/SP-811
Also available from Supt. of Docs. as SN003-003-03113-5. See also PB92-109032 and N73-26969.

MANUFACTURING

TECHNOLOGY

PB91-157164 PC A04/MF A01 National Inst. of Standards and Technology, Gaithers-

NIST Express Working Form Programmer's Reference (Revised November 1990). National PDES Testbed Report Series. S. N. Clark. Dec 90, 52p NISTIR-4407

See also PB90-269531.

PB91-167262 PC A03/MF A01 National Inst. of Standards and Technology (NCSL), Gaithersburg, MD. Information Systems Engineering

SQL3 Support for CALS Applications. L. Gallagher. Feb 91, 39p NISTIR-4494

PB91-184788 PC A03/MF A01 National Inst. of Standards and Technology (BFRL), Gaithersburg, MD.

STEP: Standard for the Exchange of Product Model Data Resource Integration: Semantic and Syntactic Rules.

W. F. Danner, D. T. Sanford, and Y. Yang. Mar 91, 21p NISTIR-4528

PB91-216663 PC A03/MF A01 National Bureau of Standards (NEL), Gaithersburg, MD. Machine Intelligence Group. Apparel STEP Translator.

T. Moncarz, and Y. T. Lee, Jun 91, 19p NISTIR-4612

Sponsored by Defense Logistics Agency, Alexandria,

PB91-222620 PC A03/MF A01 National Inst. of Standards and Technology, Gaithersbura, MD.

Configuration Management of the STEP Documents: Procedures and System Requirements. Na-

tional PDES Testbed Report Series. S. B. Katz. 10 Jul 91, 20p NISTIR-4629 Sponsored by Assistant Secretary of Defense (Production and Logistics), Washington, DC. Computer-Aided Acquisition and Logistic Support Program.

PB92-112374 PC A04/MF A01 National Inst. of Standards and Technology, Gaithersburg, MD.

Proposed Testing Methodology for STEP Applica-tion Protocol Validation. National PDES Testbed

Report Series.

M. J. Mitchell. 26 Sep 91, 51p NISTIR-4684
Sponsored by Assistant Secretary of Defense (Production and Logistics), Washington, DC. Computer-Aided Acquisition and Logistic Support Program.

PB92-112523 PC A04/MF A01 National Inst. of Standards and Technology, Gaithers-

National inits. of standards and Technology, Gaithersburg, MD.

Test Plan for Validating a Context Driven Integrated Model (CDIM) for Sheet Metal Die Design. National PDES Testbed Report Series.

K. K. Jurrens. Aug 91, 55p NISTIR-4699

Sponsored by Assistant Secretary of Defense (Production and Logistics). Washington, DC. Computer-Aided Acquisition and Logistics Support Program. Acquisition and Logistic Support Program.

# Computer Aided Design (CAD)

Not available NTIS National Bureau of Standards (NEL), Gaithersburg, MD. Factory Automation Systems Div.
UNIX in the Government's Automated Manufacturing Research Facility (AMRF). Final rept.

D. Libes. 1986, 6p

Pub. in Government Computer News 5, n6 p1-6, 14 Feb 86

PB92-123090 PC A06/MF A02 National Inst. of Standards and Technology, Gaithers-Validation Testing Laboratory User's Guide. Na-

tional PDES Testbed Report Series. J. N. Breese, M. McLay, and G. Silvernale. Sep 91, 105p NISTIR-4683

See also PB91-107581. Sponsored by Assistant Secretary of Defense (Production and Logistics), Washington, DC. Computer-Aided Acquisition and Logistic Support Program.

National Inst. of Standards and Technology, Gaithersburg, MD. National Bureau of Standards Publications 1977-1987. Volume 1. Citations, Key Words, and Ab-

stracts. Special pub (Final rept. 1977-87).

National Standards Committee, New York.

Continent price \$7.00; all others write for quote.

R. Pardee, E. Gladden, and D. Harris. Aug 90, 1675p NIST/SP-790-VOL-1

Also available from Supt. of Docs. See also PB91-136515.

PB91-136515 PC A99/MF A99 EnviroSystems Supply, Inc., Fort Myers, FL.

### Computer Aided Manufacturing (CAM)

### Computer Aided Manufacturing (CAM)

PB91-132142 PC A03/MF A01 National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Factory Automation Systems Div. Software and Computer Integrated Manufacturing. H. M. Bloom. Nov 90, 11p NISTIR-4468

PB91-134718 Not available NTIS National Bureau of Standards (NEL), Gaithersburg, MD. Center for Mfg. Engineering.

Al in Manufacturing: The NBS AMRF as an Intelli-

gent Machine. Final rept.

Pinal rept.

D. A. Swyt. 1988, 16p

Pub. in Proceedings of International Conference on Expert Systems and the Leading Edge in Production Planning and Control, Intelligent Manufacturing (1st), p357-372 1988.

PB91-147595 Not available NTIS National Bureau of Standards (ICST), Gaithersburg, MD. Systems and Network Architecture Div. Application of OSI Protocols for Plant Information Networks.

Final rept.

R. J. Linn. 1987, 21p
Pub. in Proceedings of International Conference on Foundations of Computer Aided Process Operations, Park City, UT., July 5-10, 1987, p453-473.

PR91-148122 Not available NTIS National Bureau of Standards (NEL), Gaithersburg, MD. Center for Mfg. Engineering.

CIM, Data and Standardization within the NBS AMRF.

Final rept. D. A. Swyt. 1988, 7p Pub. in Robotics 4, n2 p193-199 Jun 88.

Not available NTIS PB91-148130 National Bureau of Standards (NEL), Gaithersburg, MD. Center for Mfg. Engineering. innovation in Manufacturing Technology: A View from NBS.

Final rept. D. A. Swyt. 1985, 16p

Pub. in Proceedings of Conference on Manufacturing Research: Organizational and Institutional Issues, Stuttgart, West Germany, August 19-23, 1985, p1-16.

PB91-167320 PC A03/MF A01 National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Factory Automation Systems Div. Engineering Design Laboratory Guide. A. B. Feeney. 19 Feb 91, 19p NISTIR-4519

PC A04/MF A01 PB91-167700 National Inst. of Standards and Technology (CAML), Gaithersburg, MD. Office of Applied Economics.

Automan 2.0: Decision Support Software for Automated Manufacturing Investments. User Manual S. F. Weber. Mar 91, 75p NISTIR-4543, NIST/SW/DK-91/007A, NIST/SW/DK-91/009A For system on diskette, see PB91-506568 and PB91-507194.

PB91-174623 Not available NTIS National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Precision Engineering Div. High Precision Gaging with Computer Vision Sys-

Final rept. T. D. Doiron. 1990, 12p Contract DE-Al05-85OR21584 Sponsored by Department of Energy, Oak Ridge, TN-Pub. in Industrial Metrology 1, p43-54 1990. PB91-174938 Not available NTIS National Bureau of Standards (NEL), Gaithersburg,

MD. Factory Automation Systems Div.

Error Prevention and Detection in Data Preparation for a Numerically Controlled Milling Machine.

Final rept. T. R. Kramer, and W. T. Strayer. 1987, 19p Grant 70NANB4H0006

Sponsored by Catholic Univ. of America, Washington,

Pub. in Proceedings of Symposium on Intelligent and Integrated Manufacturing Analysis and Synthesis, Boston, MA., December 13-18, 1987, p195-213.

Not available NTIS PB91-175091 National Bureau of Standards (NEL), Gaithersburg, MD. Center for Mfg. Engineering.
U.S. Manufacturing Systems: Factories Past,

Present, and Future.

Final rept.

D. A. Swyt. 1987, 13p Pub. in Proceedings of U.S./Japan Conference on Manufacturing Research Perspectives, Tokyo, Japan, October 27-29, 1986, p38-50 1987.

PB91-193367 PC A05/MF A01 National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Factory Automation Systems Div. Concurrent Engineering through Product Data Standards.

G. P. Carver, and H. M. Bloom. May 91, 77p NISTIR-

PB91-194449 PC A04/MF A01 National Inst. of Standards and Technology, Gaithersburg, MD.

Extracting STEP Geometry and Topology from a Solid Modeler: Parasolid-to-STEP.

T. R. Kramer. 2 May 91, 56p NISTIR-4577 Prepared in cooperation with Catholic Univ. of America, Washington, DC. Sponsored by Assistant Secretary of Defense (Production and Logistics), Washington, DC. Computer-Aided Acquisition and Logistic Support Program.

PB91-194480 PC A03/MF A01 National Inst. of Standards and Technology, Gaithersburg, MD. Configuration Management Concepts Document.

National PDES Testbed Report Series. S. B. Katz. 26 Apr 91, 33p NISTIR-4538

PB91-195172 Not available NTIS National Bureau of Standards (NEL), Gaithersburg, MD. Robot Systems Div.

CAD Directed Robotic Deburring.

Final rept. K. N. Murphy, R. J. Norcross, and F. M. Proctor.

1988, 7p Pub. in Proceedings of International Symposium on Robotics and Manufacturing (2nd): Research, Education, and Applications, Albuquerque, NM., November 16-18, 1988, p959-965.

PB91-195495 Not available NTIS National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Robot Systems Div.

Automating Robot Programming in the Cleaning and Deburring Workstation of the AMRF. Final rept.

F. M. Proctor, K. N. Murphy, and R. J. Norcross.

1989, 11p Pub. in Proceedings of SME Conference Deburring and Surface Conditioning '89, San Diego, CA., February 13-16, 1989, p1-11.

PB91-203299 Not available NTIS National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Center for Mfg. Engineering. Issues In the Design and Implementation of a System Architecture for Computer Integrated Manufacturing. Final rept.

A. Jones, E. Barkmeyer, and W. Davis. 1989, 12p Pub. in International Jnl. of Computer Integrated Manufacturing 2, n2 p65-76 Mar/Apr 89.

PB91-203356 Not available NTIS National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Factory Automation Systems Div. Parser That Converts a Boundary Representation Into a Features Representation. Final rept.

T. R. Kramer. 1989, 10p Contract NANB-7-H0716

See also PB89-160634. Sponsored by Catholic Univ. of America, Washington, DC.

Pub. in International Jnl. of Computer Integrated Manufacturing 2, n3 p154-163 May/Jun 89.

PB91-203737 Not available NTIS National Bureau of Standards (NEL), Gaithersburg, MD. Robot Systems Div.

Control Structure for Multi-Tasking Workstations. Final rept.

R. J. Norcross. 1988, 3p

Pub. in Proceedings of IEEE (Institute of Electrical and Electronics Engineers) International Conference on Robotics and Automation, Philadelphia, PA., April 24-29, 1988, p1133-1135.

PB91-222596 PC A03/MF A01 National Inst. of Standards and Technology, Gaithersburg, MD.

Development Plan: Application Protocols for Mechanical Parts Production. National PDES Testbed Report Series.

C. Stark, and M. Mitchell. 2 Jul 91, 36p NISTIR-4628 Sponsored by Assistant Secretary of Defense (Production and Logistics), Washington, DC. Computer-Aided Acquisition and Logistic Support Program.

PC A03/MF A01 PB91-240796 National Inst. of Standards and Technology (MEL), Gaithersburg, MD.

Manufacturing Systems Integration Control Entity Interface Document.

M. K. Senehi, S. Wallace, E. Barkmeyer, S. Ray, and E. K. Wallace. Jun 91, 47p NISTIR-4626

PR92-108885 PC A03/MF A01 National Inst. of Standards and Technology (MEL), Gaithersburg, MD.

Clock for the Manufacturing Systems Integration Testbed.

D. Libes. 5 Sep 91, 19p NISTIR-4666

PC A03/MF A01 PB92-112234 National Inst. of Standards and Technology, Gaithersburg, MD.

Conceptual Architecture for a Mechanical Parts Production System Based on STEP. National PDES Testbed Rept. Series.

E. J. Barkmeyer, J. E. Fowler, and S. P. Magleby. 27 Sep 91, 39p NISTIR-4685

Prepared in cooperation with Brigham Young Univ., Provo, UT.

PC A04/MF A01 PB92-112242 National Inst. of Standards and Technology (MEL), Gaithersburg, MD.

### Computer Aided Manufacturing (CAM)

Manufacturing Systems integration: initial Architecture Document.

M. K. Senehi, E. Barkmeyer, M. Luce, S. Ray, E. K. Wallace, and S. Wallace. Sep 91, 70p NISTIR-4682 See also PB91-240796. Sponsored by Naval Research Lab., Washington, DC. Navy Manufacturing Technology Program.

PB92-112572 PC A05/MF A01 National Inst. of Standards and Technology (MSEL),

Gaithersburg, MD.
Intelligent Processing of Materials, Technical Activities 1991. (NAS-NRC Assessment Panel, November 14-15, 1991).

Annual rept.

H. T. Yolken. 1991, 96p NISTIR-4693 See also PB89-151823 and PB91-143339.

PB92-117027 Not available NTIS National Bureau of Standards (NEL), Gaithersburg, MD. Automated Production Technology Div. Mare Island Flexible Manufacturing Workstation. Final rept.

K. Lee, and C. Lee. 1988, 10p Sponsored by Naval Research Lab., Washington, DC. Navy Manufacturing Technology Program.

Pub. in Proceedings of International Conference on Computer Integrated Manufacturing, Troy, NY., May 23-25, 1988, p9-18.

PB92-123058 PC A03/MF A01
National Inst. of Standards and Technology (NEL),
Gaithersburg, MD. Factory Automation Systems Div.
Multi-Enterprise Concurrent Engineering through international Standards.

G. P. Carver, and H. M. Bloom. Oct 91, 27p NISTIR-4708

See also PB91-193367.

### Computer Software

PB91-144378 PC A03/MF A01 National Inst. of Standards and Technology, Gaithers-

NIST STEP Working Form Programmer's Reference. National PDES Testbed Report Series (Re-

S. N. Clark. 29 Nov 90, 27p NISTIR-4353/REV See also PB90-250077.

### Job Environment

PC A06/MF A01 National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Center for Fire Research. Users Guide for RAPID, Version 2.3.

Special pub. (Final). R. D. Peacock, J. N. Breese, and C. L. Forney. Jan 91, 113p NIST/SP-798 Supersedes PB87-100996. Also available from Supt.

of Docs. as SN003-003-03046-5.

PB91-184762 PC A03/MF A01 National Inst. of Standards and Technology (BFRL),

Gaithersburg, MD.
Visibility of Exit Directional Indicators.
B. L. Collins, and P. J. Goodin. Mar 91, 44p NISTIR-

See also PB91-161984. Sponsored by National Electrical Mfrs. Association, Washington, DC.

#### Joining

PB91-134619 Not available NTIS National Inst. of Standards and Technology (IMSE), Boulder, CO. Fracture and Deformation Div. Report on 1989 Actions by international institute of Weiding.

T. A. Siewert, and M. J. Houle. 1990, 3p Pub. in Materials Evaluation 48, p408, 411-412 Mar 90.

PB91-149278 Not available NTIS National Inst. of Standards and Technology (IMSE), Boulder, CO. Fracture and Deformation Div. Dynamic Arc-Power Source Response in GMA Weiding. Final rept.

Pilla rept.

T. A. Siewert, and G. Kohn. 1989, 4p

Pub. in Proceedings of American Welding Society

Annual Meeting (68th) and International American

Welding Society Brazing Conference (18th), Chicago,

IL., March 22-27, 1987, p43-46 1989.

PB91-162339 Not available NTIS National Inst. of Standards and Technology (MSEL), Boulder, CO. Fracture and Deformation Div.

Analysis and Characterization of Commercial Weiding Fluxes. Final rept.

T. A. Siewert, and G. L. Franke. 1990, 9p Sponsored by David Taylor Research Center, Bethesda. MD.

Pub. in Welding Research Supplement, p247s-255s Jul 90.

PB91-174250 Not available NTIS National Inst. of Standards and Technology (MSEL), Boulder, CO. Fracture and Deformation Div. Sensing of GMAW Droplet Transfer Modes Using an ER 100S-1 Electrode. Final rept.

G. Adam, and T. A. Siewert. 1990, 6p Pub. in Welding Research Supplement, p103-s-108-s

### Manufacturing, Pianning, Processing & Control

PB91-162230 Not available NTIS National Bureau of Standards (NEL), Gaithersburg, MD. Factory Automation Systems Div. Research Tackies Automation issues. Final rept. C. R. McLean. 1986, 5p

Pub. in Design News 7, p94-98 Jul 86.

PC A04/MF A01 PB91-240812 National Inst. of Standards and Technology (MEL), Gaithersburg, MD. New Concepts of Precision Dimensional Measurement for Modern Manufacturing. D. A. Swyt. Aug 91, 59p NISTIR-4644

### **Optics & Lasers**

Not available NTIS PB91-162107 National Inst. of Standards and Technology (MSEL), Gaithersburg, MD. Ceramics Div. Analytic Solution for the Three-Layer Multiple Beam interferometer. Final rept.

R. G. Horn, and D. T. Smith. 1991, 7p

Contract ONR-N0014-8-F-0034 Sponsored by Office of Naval Research, Arlington, VA. Pub. in Applied Optics 30, n1 p59-65, 1 Jan 91.

### Quality Control & Reliability

PB91-143339 PC A05/MF A01 National Inst. of Standards and Technology (MSEL), Gaithersburg, MD. Materials Reliability. Technical Activities, 1990. (NAS-NRC Assessment Panel, January 31-February 1, 1991). H. I. McHenry. Dec 90, 82p NISTIR-90/4395

PB91-147132 Not available NTIS National Bureau of Standards (NML), Gaithersburg, MD. Radiometric Physics Div. Fundamentais and Applications of Infrared Thermography for Nondestructive Testing. Final rept.

J. Cohen. 1987, 43p

Pub. in International Advances in Nondestructive Testing, v13 p39-81 1987.

PB91-147900 Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Ionizing Radiation Div.
Real-Time Radiology Standards: Results of a Workshop. Final rept.

R. C. Placious, and T. A. Siewert. 1987, 2p Pub. in Materials Evaluation 45, p1270-1271 Nov 87.

PB91-148163 Not available NTIS National Bureau of Standards, Gaithersburg, MD. Program Office.
Industry and Government Strategles for Product Quality.

Final rept.

G. Tassey. 1989, 15p

Pub. in International Jnl. of Technology Management 4, n2 p189-203 1989.

Not available NTIS PB91-149088 National Bureau of Standards (NML), Gaithersburg, MD

NBS Quality Assurance Support: Current and Planned Services. Final rept.

Co. W. Reimann. 1986, 9p Pub. in Proceedings of American Society for Quality Control, Annual Quality Congress Transactions (40th), Anaheim, CA., May 19-21, 1986, p53-61.

PB91-149930 Not available NTIS National Bureau of Standards (NML), Gaithersburg,

Measurement Quality Assurance. Final rept.

C. W. Reimann. 1987, 10p See also PB89-147508.

Pub. in Proceedings of American Society for Quality Control Annual Quality Congress Transactions (41st), Minneapolis, MN., May 4-6, 1987, p389-398.

PB91-159103 Not available NTIS National Inst. of Standards and Technology, Gaithers-burg, MD. Standard Reference Materials Program.

**Quality Control & Reliability** 

Reference Materials: Their Role in Measurement Accuracy.

Final rept.

W. P. Reed, and S. D. Rasberry, 1990, 9p Pub. in Impact of Science on Society, n157 p71-79 1990.

PB91-162354 Not available NTIS National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Precision Engineering Div. Stylus Profiling at High Resolution and Low Force.

Final rept. J. F. Song, and T. V. Vorburger. 1991, 9p Pub. in Applied Optics 30, n1 p42-50, 1 Jan 91.

PB91-167221 PC A03/MF A01 National Bureau of Standards (NEL), Gaithersburg, MD. Machine Intelligence Group.

Review of Current Geometric Tolerancing Theories and Inspection Data Analysis Algorithms.

S. C. Feng, and T. H. Hopp. Feb 91, 24p NISTIR-4509

Sponsored by Naval Research Lab., Washington, DC. Navy Manufacturing Technology Program.

PB91-187765 PC A03/MF A01 National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Robot Systems Div.

AMRF Composites Fabrication Workstation: A Test Methodology to Measure the Quality of Thermoplastic Composite Parts.
J. A. Falco. Apr 91, 23p NISTIR-4552

PB91-190058 Not available NTIS Not available NTIS National Inst. of Standards and Technology (MSEL), Boulder, CO. Fracture and Deformation Div. Image Quality Indicator Design for Radioscopy and Tomography.

Final rept. Than rep.
T. A. Siewert, D. W. Fitting, D. A. Shepherd, M. W.
Austin, and C. N. McCowan. 1990, 8p
Pub. in Review of Progress in Quantitative Nondestructive Evaluation, v9 p383-390 1990.

Not available NTIS National Inst. of Standards and Technology (NEL), Gaithersburg, MD.

Process Quality Enhancement for Machine Tools: Measurements and Standards.

Final rept.

J. W. Lyons. 1989, 11p Pub. in Proceedings of U.S.-China Science, Technology, and Economic Development Program - Technical Transformation of Traditional Industries, May 1988, p70-80 1989.

PB91-203463 Not available NTIS National Bureau of Standards (NEL), Gaithersburg, MD. Precision Engineering Div.
Capacitance versus Stylus Measurements of Sur-

face Roughness.

Final rept. A. G. Lieberman, T. V. Vorburger, C. H. W. Giauque, D. G. Risko, R. Resnick, and J. Rose. 1988, 16p Pub. in Surface Topography 1, p315-330 1988.

PB91-216721

(Order as PB91-216705, PC A07/MF A01) National Inst. of Standards and Technology, Gaithers-

burg, MD.
Standard Reference Specimens in Quality Control

of Engineering Surfaces.
J. F. Song, and T. V. Vorburger. 1991, 19p
Included in Jnl. of Research of the National Institute of Standards and Technology, v96 n3 p271-289 May/Jun

PC A08/MF A02 National Inst. of Standards and Technology (TS), Gaithersburg, MD. Weights and Measures Program. Uniforms Laws and Regulations as Adopted by the National Conference on Weights and Measures (76th), 1991. Handbook.

C. S. Brickenkamp, and J. A. Koenig. Oct 91, 173p NIST/HB-130-1992 ED

Also available from Supt. of Docs. as SN003-003-03105-4. Supersedes PB91-107102.

PB92-112424 PC A10/MF A03 National Inst. of Standards and Technology (TS), Gaithersburg, MD. Weights and Measures Program. Specifications, Tolerances, and Other Technical Requirements for Weighing and Measuring Devices as Adopted by the 76th National Conference on Weights and Measures, 1991. Handbook.

H. V. Oppermann. Oct 91, 214p NIST/HB-44-1992 ED

Also available from Supt. of Docs. as SN003-003-03114-3. Supersedes PB91-107136.

PB92-112465 PC A16/MF A03 National Inst. of Standards and Technology (TS), Gaithersburg, MD. Weights and Measures Program. Report of the National Conference on Weights and Measures (76th). Held in Philadelphia, PA. on July 14-19, 1991.

Special pub. (Final). C. S. Brickenkamp, and A. H. Turner. Sep 91, 374p NIST/SP-816

Also available from Supt. of Docs. as SN003-003-03115-1. See also report for 1990, PB91-112763. Library of Congress catalog card no. 26-27766.

### Research Program Administration & **Technology Transfer**

PB91-149351 Not available NTIS National Bureau of Standards (NEL), Gaithersburg, MD. Center for Mfg. Engineering.

Transferring NBS Technology to Small Manufac-

turers Through State and Local Centers. Final rept.

D. A. Swyt. 1988, 7p Pub. in Jnl. of Technology Transfer 13, n1 p7-13 1988.

### Robotics/Robots

PC A03/MF A01 National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Intelligent Controls Group. TROI User's Guide.

B. Warsaw, and J. Michaloski. Jan 91, 46p NISTIR-

PB91-158568 Not available NTIS National Bureau of Standards (NEL), Gaithersburg, MD. Robot Systems Div.

Self-Adjustment of a Robot Joint Controller. Final rept.

N. Dagalakis, and D. R. Myers. 1986, 8p Pub. in Proceedings of Annual IEEE (Institute of Electrical and Electronics Engineers) Industrial Electronics Society Conference (12th), Milwaukee, Wl., September 1986, p530-537. PB91-158576 Not available NTIS National Bureau of Standards (NEL), Gaithersburg, MD. Robot Systems Div.

Application of the Joint Excitation Gear Adjust-

ment Technique to Low Frequencies and Heavy Robot Joints.

Final rept.

N. G. Dagalakis, and D. R. Myers. 1987, 11p Contract N00014-83-K-0236

Sponsored by Office of Naval Research, Arlington, VA. Pub. in Proceedings of SME Conference on Robots, Chicago, IL., April 27-30-, 1987, p17-43-17-54.

PB91-159194 Not available NTIS National Bureau of Standards (NEL), Gaithersburg, MD. Automated Production Technology Div.

Design and Implementation of a Five-Axis Robotic Micromanipulator for Inserting Parts into Precision Collets. Final rept.

A. H. Slocum, L. Greenspan, and J. P. Peris. 1988,

Pub. in International Jnl. of Machine Tools and Manufacture 28, n2 p131-139 1988.

PB91-167361 PC A03/MF A01 National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Robot Systems Div Robot Characterization Testing N. Dagalakis. Jan 91, 19p NISTIR-4510

PB91-174961 Not available NTIS National Bureau of Standards (NEL), Gaithersburg, MD. Robot Systems Div. Robot Sensor Language.

Final rept.

S. Leake. 1987, 8p Pub. in Proceedings of Goddard Conference on Space Applications of Artificial Intelligence (AI) and Robotics, Greenbelt, MD., May 13-14, 1987, p1-8.

PB91-174979 Not available NTIS National Bureau of Standards (NEL), Gaithersburg, MD. Robot Systems Div. Control of Flexible Robot Arm.

Final rept. J. D. Lee, L. S. Haynes, B. L. Wang, and K. H. Tsai. 1987, 11p

Pub. in Proceedings of Conference on Modeling and Control of Robotic Manipulators and Manufacturing Processes, Boston, MA., December 13-18, 1987, p241-251.

PB91-194969 Not available NTIS National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Robot Systems Div. NASREM Robot Control System and Testbed. Final rept.

R. Lumia, J. Fiala, and A. Wavering. 1990, 7p Pub. in International Jnl. of Robotics and Automation 5, n1 p20-26 1990.

Not available NTIS PB91-203190 National Bureau of Standards (NEL), Gaithersburg, MD. Robot Systems Div.

Application of the PIPE Image Processing Machine

to Scanning Microscopy. Final rept.

M. Herman. 1988, 5p

Pub. in Proceedings of SPIE (Society of Photo-Optical Instrumentation Engineers) - Scanning Microscopy Technologies and Applications, Los Angeles, CA., January 13-15, 1988, v897 p169-173.

Not available NTIS PR91-203208 National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Robot Systems Div.

### Robotics/Robots

Video Compression for Remote Vehicle Driving. Final rept.

M. Herman, K. Chaconas, M. Nashman, and T. H.

Hong. 1989, 8p Pub. in Proceedings of SPIE (Society of Photo-Optical Instrumentation Engineers) - Mobile Robots III, Cam-bridge, MA., November 10-11, 1988, v1007 p136-143 1989

PB91-217414 PC Ans/ME Ans National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Robot Systems Div. Generation of Smooth Trajectories without Planning

J. C. Fiala. Jun 91, 19p NISTIR-4622

PB92-117019 Not available NTIS National Bureau of Standards (NEL), Gaithersburg, MD. Robot Systems Div.

Performance Measures of a Robotic Microposi-

Final rept.

J. D. Lee, J. S. Albus, N. G. Dagalakis, and T. M.

Tsai. 1988, 10p

Pub. in Proceedings of International Symposium on Robotics and Manufacturing: Research, Education, and Applications (2nd), Albuquerque, NM., November 16-18, 1988, p1047-1056. PB91-189225 Not available NTIS National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Precision Engineering Div. Statistical Process Control Tactics for Coordinate Measuring Machines. Final rept.

T. Doiron. 1991, 12p

Pub. in Proceedings of Measurement Science Conference, Anaheim, CA., January 31-February 1, 1991, 12p.

PB91-202978 Not available NTIS Mational Inst. of Standards and Technology (NEL), Gaithersburg, MD. Precision Engineering Div. Computer Vision Based Station for Tool Setting and Tool Form Measurement. Final rept.

T. D. Doiron, 1989, 8p Contract DE-AI05-85OR21584

Sponsored by Department of Energy, Oak Ridge, TN. Pub. in Precision Engineering 11, n4 p231-238 Oct 89.

PB92-123066 PC A03/MF A01 National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Factory Automation Systems Div. Use of Solid Modeling in the Design of M3 Components. A. B. Feeney, and P. F. Brown. Sep 91, 35p NISTIR-

4710

See also PR90-136938 and PR90-242207

PB91-187534 PC A05/MF A01 National Inst. of Standards and Technology (NEL),

Boulder, CO. Chemical Engineering Science Div. Analytical Model for the Refrigeration Power of the Orifice Pulse Tube Refrigerator.

Technical note.

P. J. Storch, R. Radebaugh, and J. E. Zimmerman. Dec 90, 95p NIST/TN-1343

Also available from Supt. of Docs. Sponsored by National Aeronautics and Space Administration, Moffett Field, CA. Ames Research Center.

PB91-192997 PC A06/MF A01 National Inst. of Standards and Technology, Gaithersburg, MD. Office of Standards Services. Conformity Assessment Workshop on Pressure

Vessels. B. G. Simson. Apr 91, 103p NISTIR-4542 Sponsored by American Society of Mechanical Engineers. New York.

PB91-194464 PC A05/MF A01

National Inst. of Standards and Technology (CSTL), Boulder, CO. Chemical Engineering Div. Heat Transfer and Pressure Drop in a Compact Pin-Fin Heat Exchanger with Pin Orientation at 18 deg to the Flow Direction.

D. A. Olson. Feb 91, 78p NISTIR-3965

Sponsored by National Aeronautics and Space Administration, Hampton, VA. Langley Research Center.

### Tooling, Machinery, & Tools

PB91-146993 Not available NTIS National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Chemical Process Metrology Div. State-of-the-Art in Pressure Metrology.

Final rept. V. E. Bean, 1990, 19p

Pub. in Proceedings of Symposium Semana de la Calidad y la Metrologia en El Politecnico, Mexico City, Mexico, November 26-30, 1990, p231-249 1990.

PB91-147751 Not available NTIS National Bureau of Standards (IMSE), Boulder, CO. Fracture and Deformation Div.

Progress in Uniform Field Eddy Current Methods. Final rept.

J. D. Moulder, N. Nakagawa, and P. J. Shull, 1987,

Contract W-7405-ENG-82 Sponsored by Air Force Wright Aeronautical Labs., Wright-Patterson AFB, OH. Materials Lab. in Review of Progress in Quantitative Nonde-

structive Evaluation, v7A p147-155 1987.

Not available NTIS Mational Bureau of Standards (NEL), Gaithersburg, MD. Automated Production Technology Div.
Using Surface Roughness as a Wear Criterion in High-Speed Steel End-Milling.

Final rept.

L. Evans. 1986, 6p Pub. in Proceedings of North American Manufacturing Research Conference (14th), Minneapolis, MN., May 28-30, 1986, p177-182.

PB91-159186 Not available NTIS National Bureau of Standards (NEL), Gaithersburg, MD. Automated Production Technology Div. Kinematic Couplings for Precision Fixturing. Part 2. Experimental Determination of Repeatability and Stiffness. Final rept.

A. H. Slocum, and A. Donmez. 1988, 8p Sponsored by Oak Ridge National Lab., TN. Pub. in Precision Engineering 10, n3 p115-122 Jul 88.

### Tribology

PB91-203943 Not available NTIS National Inst. of Standards and Technology (MSEL), Gaithersburg, MD. Ceramics Div. Numeric Database for Tribology: Format and Application Issues. Final rept.

A. W. Ruff, J. Rumble, and S. Jahanmir. 1991, 17p Sponsored by Department of Energy, Washington, DC., National Science Foundation, Washington, DC., and Department of the Army, Washington, DC., Pub. in Computerization and Networking of Materials Databases: Second Volume, ASTM STP 1106, p180-

196 1991.

### General

PR91-147942 Not available NTIS National Inst. of Standards and Technology (NML), Boulder, CO. Chemical Engineering Science Div. Review of Pulse Tube Refrigeration.

Final rept.

R. Radebaugh. 1990, 15p Sponsored by National Aeronautics and Space Administration, Moffett Field, CA. Ames Research Center. Pub. in Advances in Cryogenic Engineering 35, p1191-1205 1990.

PB91-147967 Not available NTIS National Inst. of Standards and Technology (NML), Boulder, CO. Chemical Engineering Science Div. Apparatus for the Measurement of Regenerator Performance in Pulse Tube Refrigerators. Final rept.

W. Rawlins, and R. Radebaugh. 1990, 9p Sponsored by National Aeronautics and Space Administration, Moffett Field, CA. Ames Research Center. Pub. in Advances in Cryogenic Engineering 35, p1213-1221 1990.

Not available NTIS PB91-203877 National Bureau of Standards (NEL), Boulder, CO. Chemical Engineering Science Div.

Optimization of a Pulse Tube Refrigerator for a Fixed Compressor Swept Volume.

Final rept. R. Radebaugh, K. Chowdhury, and J. Zimmerman.

Sponsored by National Aeronautics and Space Administration, Moffett Field, CA. Ames Research Center. Pub. in Proceedings of the International Cryocooler Conference (5th), Monterey, CA., August 18-19, 1988, p113-125.

PB92-116482 Not available NTIS National Inst. of Standards and Technology (NML), Boulder, CO. Chemical Engineering Science Div.

Measurement of Regenerator Performance in a Vuilleumier Refrigerator.

Final rept. P. E. Bradley, and R. Radebaugh. 1991, 10p Pub. in Proceedings of Interagency Meeting on Cryocoolers (4th), Plymouth, MA., October 24, 1990, p195-

204 1991

PB92-123041 PC A05/MF A01 National Inst. of Standards and Technology (MEL), Gaithersburg, MD.

Publications of the Manufacturing Engineering Laboratory Covering the Period January 1989-September 1991.

P. Nanzetta, C. F. Hutchins, and L. L. Wood. Nov 91, 95p NISTIR-4713

See also PB90-130568.

### Carbon & Graphite

PB91-158683 Not available NTIS National Inst. of Standards and Technology (MSEL).

Gaithersburg, MD. Ceramics Div.

Effects of Different CH4-H2 Gas Compositions on the Morphology and Growth of Diamond Grown by Hot Filament CVD.

Final rept.

E. N. Farabaugh, and A. Feldman. 1990, 6p Pub. in Materials Research Society Symposium Proceedings, v162 p127-132 1990.

PB92-116540 Not available NTIS National Inst. of Standards and Technology (MSEL), Gaithersburg, MD. Reactor Radiation Div. Neutron Measurements of Intramolecular Vibrational Modes in C60.

Final rept. R. L. Cappelletti, J. R. D. Copley, W. A. Kamitakahara, F. Li, J. S. Lannin, and D. Ramage. 1991, 4p

Pub. in Physical Review Letters 66, n25 p3261-3264, 24 Jun 91.

### Ceramics, Refractories, & Glass

PC A08/MF A02 National Inst. of Standards and Technology (IMSE), Gaithersburg, MD. Ceramics Div. Strength and Microstructure of Ceramics. Final technical rept. 1 Oct 89-30 Sep 91. B. R. Lawn. Oct 91, 170p AFOSR-TR-91-0892, Grants AFOSR-ISSA-90-0003, AFOSR-ISSA-91-0002

PB91-132233 PC A08/MF A01 National Inst. of Standards and Technology (MSEL), Gaithersburg, MD. Ceramics Div. Institute for Materials Science and Engineering, Ceramics: Technical Activities 1990. S. M. Hsu. Nov 90, 170p NISTIR-4394 See also report for 1989, PB90-163981.

Not available NTIS PB91-147330 National Inst. of Standards and Technology (MSEL), Gaithersburg, MD. Metallurgy Div. Dihedral Angles in Magnesia and Alumina: Distributions from Surface Thermal Grooves. Final rept.

C. A. Handwerker, J. M. Dynys, R. M. Cannon, and R. L. Coble. 1990, 7p

Pub. in Jnl. of the American Ceramic Society 73, n5 p1371-1377 May 90.

Not available NTIS PB91-147348 National Inst. of Standards and Technology (MSEL), Gaithersburg, MD. Metallurgy Div.

Metal Reference Line Technique for Obtaining Di-

hedral Angles from Surface Thermal Grooves. Final rept.

C. A. Handwerker, J. M. Dynys, R. M. Cannon, and R. L. Coble. 1990, 6p Pub. in Jnl. of the American Ceramic Society 73, n5 p1365-1370 May 90.

Not available NTIS National Bureau of Standards (IMSE), Gaithersburg, MD. Ceramics Div.

Application of Analytical Electron Microscopy to Glass-Bonded Aluminas.

Final rept.

B. J. Hockey. 1986, 4p Proceedings of Annual Meeting Electron Microscopy Society of America (44th), Albuquerque, NM., August 10-15, 1986, p436-439.

PB91-147553 Not available NTIS National Bureau of Standards (IMSE), Gaithersburg, MD. Ceramics Div.

Quantitative Determination of Amorphous Content in Ceramic Materials Using X-ray Powder Diffraction.

Final rept.

M. A. Kuchinski, C. R. Hubbard, L. A. Johnson, and V. A. Greenhut. 1988, 9p
Pub. in Proceedings of International Conference on Ceramic Powder Processing Science (1st), Orlando, FL., November 1-4, 1987, p321-329 1988.

Not available NTIS PB91-147983 National Bureau of Standards (IMSE), Gaithersburg, MD. Ceramics Div. Hermetically Sealed Inert Atmosphere Cell for X-ray Powder Diffraction.

Final rept.

p255-261 1987.

J. J. Ritter. 1988, 2p Pub. in Powder Diffraction 3, n1 p30-31 Mar 88.

PB91-147991 Not available NTIS National Bureau of Standards (IMSE), Gaithersburg, MD. Ceramics Div. Graphics Program for Binary and Ternary Ceramic

Phase Diagrams. Final rept. P. K. Schenck, and J. R. Dennis. 1987, 7p Pub. in Proceedings of International Conference on User Applications of Alloy Phase Diagrams, ASM Materials Week '86, Lake Buena Vista, FL., October 1986,

PB91-148221 Not available NTIS National Bureau of Standards (IMSE), Gaithersburg, MD. Ceramics Div. Effects of Crystal Bonding on Brittle Fracture.

G. S. White, E. R. Fuller, S. W. Freiman, and T. L.

Baker. 1988, 7p Pub. in Jnl. of Materials Research 3, n3 p491-497

Not available NTIS National Bureau of Standards (IMSE), Gaithersburg, MD. Ceramics Div.

Physical and Thermo-Mechanical Properties of

Monoclinic Single Crystals.

Final rept. R. P. Ingel, P. A. Willging, B. A. Bender, and T. W. Coyle, 1988, 11p

Sponsored by Naval Research Lab., Washington, DC. Pub. in Advances in Ceramics 24A, p459-469 1988.

PB91-149096 Not available NTIS National Bureau of Standards (IMSE), Gaithersburg,

MD. Ceramics Div.
Low Temperature Chemical Process for Precursors to Boride and Carbide Ceramics Powders.

Final rept. J. J. Ritter. 1987, 21p

Pub. in Proceedings of Conference on Ceramic Powder Science and Technology, Boston, MA., August 6, 1986, 21p 1987.

Not available NTIS PB91-149104 National Bureau of Standards (IMSE), Gaithersburg, MD. Ceramics Div.

Low Temperature Synthesis of Ceramic Powders for Structural and Electronic Applications. Final rept.

J. J. Ritter, and K. G. Frase. 1986, 497p

Pub. in Proceedings of International Conference on UItrastructure Processing of Ceramics, Glasses and Composites (2nd), Palm Coast, FL., March 1985, 497p

Not available NTIS PB91-149112 National Inst. of Standards and Technology (MSEL), Gaithersburg, MD. Ceramics Div.
In situ Measurements of Bridged Crack Interfaces

in the Scanning Electron Microscope.

J. Rodel, J. F. Kelly, and B. R. Lawn. 1990, 6p Sponsored by Air Force Office of Scientific Research, Bolling AFB, DC.

Pub. in Jnl. of the American Ceramic Society 73, n11 p3313-3318 Nov 90.

PB91-149419 Not available NTIS National Inst. of Standards and Technology (MSEL), Gaithersburg, MD. Metallurgy Div.

Comparison of Flux Dynamics in Two Samples of YBa2Cu3O7 with Different Pinning.

Final rept.

Final rept.

M. Turchinskaya, L. H. Bennett, L. J.
Swartzendruber, A. Roitburd, C. K. Chiang, M. Hill, J.
E. Blendell, and K. Sawano. 1990, 4p
Pub. in Materials Research Society Symposium Pro-

ceedings, v169 p931-934 1990.

PB91-149435 Not available NTIS National Inst. of Standards and Technology (MSEL), Boulder, CO. Fracture and Deformation Div. Mechanical Loss in a Glass-Epoxy Composite.

M. Weller, and H. Ledbetter. 1990, 3p Sponsored by Department of Energy, Washington, DC. Office of Fusion Energy.
Pub. in Jnl. of Materials Research 5, n5 p913-915 May

PB91-150037 Not available NTIS National Inst. of Standards and Technology (MSEL), Gaithersburg, MD. Ceramics Div. Improved Analysis for Flexural Creep with Application to Sialon Ceramics.

Final rept. C: F. Chen, and T. J. Chuang. 1990, 8p Contract DE-A105-850421569

Pub. in Jnl. of American Ceramic Society 73, n8 p2366-2373 Aug 90.

PB91-158600 Not available NTIS National Bureau of Standards (IMSE), Gaithersburg, MD. Ceramics Div.

Near Net Shape Forming of Ceramics. Final rept.

Pub. in Proceedings of ASME Winter Annual Meeting Interdisciplinary Issues in Materials Processing and Manufacturing, Boston, MA., December 13-18, 1987, p19-31.

PB91-158774 Not available NTIS National Bureau of Standards (IMSE), Gaithersburg, MD. Ceramics Div.

National Bureau of Standards-American Ceramic Society Phase Diagram Data Program. Final rept.

J. W. Hastie. 1987, 5p Pub. in Proceedings of International CODATA Conference (10th), Computer Handling and Dissemination of Data, Ottawa, Canada, July 14-17, 1986, p179-183

### Ceramics, Refractories, & Glass

Not available NTIS National Bureau of Standards (NEL), Gaithersburg, MD. Building Materials Div.

Towards Computer-Based Microstructure Models for Cement-Based Systems.

H. M. Jennings. 1987, 10p Pub. in Materials Research Society Symposium Proceedings, v85 p291-300 1987.

PB91-159277 Not available NTIS National Bureau of Standards (IMSE), Gaithersburg, MD. Ceramics Div.

Tensile Creep Behavior of Structural Ceramics. Final rept.

S. M. Wiederhorn, L. Chuck, and T. J. Chuang. 1986, 20p

Pub. in Proceedings of Automotice Technology Development Contractors' Coordination Meeting (24th), Dearborn, MI., October 27, 1986, 20p.

PB91-162321 Not available NTIS National Inst. of Standards and Technology (MSEL), Gaithersburg, MD. Metallurgy Div.

Superconducting PyPbxSnySr2Ca2Cu3Oz. Final rept. Properties Bi2-x-

H. M. Seyoum, J. M. Habib, L. H. Bennett, W. Wong-Ng, and A. J. Shapiro. 1990, 6p Pub. in Supercond. Sci. Technol. 3, p616-621 1990.

PB91-175075 Not available NTIS National Inst. of Standards and Technology (IMSE), Gaithersburg, MD. Ceramics Div.

Small-Angle-Scattering Determination of the Mi-crostructure of Porous Silica Precursor Bodies. Final rept.

G. G. Long, S. Krueger, P. R. Jemian, D. R. Black, H. E. Burdette, J. P. Cline, and R. A. Gerhardt. 1990, 10p

Pub. in Jnl. of Applied Crystallography 23, p535-544 1990.

PR91-175190 Not available NTIS National Bureau of Standards (IMSE), Gaithersburg, MD. Ceramics Div.

Low Temperature Chemical Route to Precursors of Borlde and Carbide Ceramic Powders.

Final rept.

J. J. Ritter. 1986, 6p Pub. in Materials Research Society Symposia Proceedings, v73 p367-372 1986.

PB91-175620 Not available NTIS National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Building Environment Div.
Summary of Low-Density Glass-Fiber Reference Materials at NIST: 1980-1989.

Final rept. R. R. Zarr. 1991, 10p

Pub. in Jnl. of Thermal Insulation 14, p211-220 Jan 91.

Not available NTIS PB91-187237 National Inst. of Standards and Technology (IMSE), Gaithersburg, MD. Ceramics Div.
Isothermal Phase Behavior of Ag3SbS3, ZnGeP2,

and ZnS.

S. Block, G. J. Piermarini, R. G. Munro, and E. Fuller. 1989, 12p Pub. in Physica A 156, n1 p341-352, 15 Mar 89.

Not available NTIS PB91-189449 National Inst. of Standards and Technology (MSEL), Gaithersburg, MD. Reactor Radiation Div.

Structures and Properties of New Zeolite X-Type Zincophosphate and Beryllophosphate Molecular Sieves Final rept.

W. T. A. Harrison, T. E. Gier, K. L. Moran, J. M. Nicol, H. Eckert, and G. D. Stucky. 1991, 3p Pub. in Chemical Materials 3, n1 p27-29 1991.

PB91-189704 Not available NTIS National Inst. of Standards and Technology (IMSE), Gaithersburg, MD. Ceramics Div.

Fundamental Condition for Existence of Microcrack Clouds in Monophase Ceramics. Final rept.

B. R. Lawn. 1991, 4p

Sponsored by Air Force Office of Scientific Research, Bolling AFB, DC.

Pub. in Jnl. of the European Ceramic Society 7, p17-20 1991.

PB91-190082 Not available NTIS National Inst. of Standards and Technology (IMSE), Gaithersburg, MD. Ceramics Div. Indentation Determination of Crack Growth Parameters in Gallium Arsenide.

Final rept. G. S. White, S. W. Freiman, and A. M. Wilson. 1991, Зр

Contract N00014-87-F-0007 Sponsored by Office of Naval Research, Arlington, VA.

Pub. in Jnl. of the American Ceramic Society 74, n2 p419-421 Feb 91.

PB91-194670 Not available NTIS National Inst. of Standards and Technology (MSEL),

Gaithersburg, MD. Ceramics Div.

Effect of Thermochemical Treatments on the Strength and Microstructure of SiC Fibers. Final rept.

B. A. Bender, J. S. Wallace, and D. J. Schrodt. 1991, 7p

Sponsored by Naval Air Systems Command, Washington, DC.

Pub. in Jnl. of Materials Science 26, p970-976 1991.

PR91-195628 Not available NTIS National Inst. of Standards and Technology (IMSE), Gaithersburg, MD. Ceramics Div.

Phase Equilibria of the System Strontium Oxide-Calcium Oxlde-Cupric Oxlde. Final rept

R. S. Roth, C. J. Rawn, J. J. Ritter, and B. Burton. 1989, 5p

Pub. in Jnl. of the American Ceramic Society 72, n8 p1545-1549 1989.

Not available NTIS PB91-195669 National Bureau of Standards (IMSE), Gaithersburg,

Standardization of Advanced Ceramics.

Final rept.

S. J. Schneider, and D. R. Bradley. 1988, 7p. Pub. in Advanced Ceramic Materials 3, n5 p442-448 1988.

Not available NTIS PR91-202820 National Bureau of Standards (IMSE), Gaithersburg, MD. Ceramics Div.

Comparison of Creep Rupture Behavior in Tension and Bending. Final rept.

D. F. Carroll, T. J. Chuang, and S. M. Wiederhorn. 1988, 7p

Pub. in Ceramic Engineering and Science Proceedings 9, n7-8 p635-641 1988.

PB91-202838 Not available NTIS National Bureau of Standards (IMSE), Gaithersburg, MD. Ceramics Div.

High Temperature Creep Testing of Ceramics. Final rept.

D. F. Carroll, and S. M. Wiederhorn. 1988, 15p Pub. in International Jnl. of High Technology Ceramics 4, n2-4 p227-241 1988.

PB91-203489 Not available NTIS National Bureau of Standards (IMSE), Gaithersburg, MD. Ceramics Div.

Small Angle Neutron Scattering Characterization of Microporous Silica.

Final rept. G. G. Long, S. T. Krueger, and R. A. Gerhardt. 1988,

Pub. in Ceramic Transactions, v5 p171-179 1988.

Not available NTIS PB91-203786 National Bureau of Standards (IMSE), Gaithersburg, MD. Reactor Radiation Div. Refinement of the Structure of Beta'-MoO3.

Final rept. J. B. Parise, E. M. McCarron, A. W. Sleight, and E. Prince, 1988, 4p

Pub. in Materials Science Forum 27-28, p85-88 1988.

Not available NTIS PB91-204172 National Bureau of Standards (IMSE), Gaithersburg, MD. Ceramics Div.

Creep and Reliability of Ceramic Materials at Elevated Temperatures.

Final rept.
S. M. Wiederhorn, T. J. Chuang, and D. F. Carroll.

1988, 14p Contract DE-Al05-85OR21569

Sponsored by Department of Energy, Oak Ridge, TN. Pub. in Proceedings of International Symposium on Fine Ceramics Arita '87, Japan, Novémber 17-19, 1987, p117-130 1988.

PB91-236927 Not available NTIS National Inst. of Standards and Technology (MSEL), Gaithersburg, MD. Ceramics Div. Cyclic Fatigue from Frictional Degradation at

Bridging Grains in Alumina.

Final rept.

S. Lathabai, J. Rodel, and B. R. Lawn. 1991, 9p Pub. in Jnl. of the American Ceramic Society 74, n6 p1340-1348 Jun 91.

PB91-236935 Not available NTIS National Inst. of Standards and Technology (MSEL), Gaithersburg, MD. Ceramics Div. Fracture Mechanics Model for Subthreshold In-

dentation Flaws. Part 1. Equilibrium Fracture. Final rept.

S. Lathabai, J. Rodel, T. Dabbs, and B. R. Lawn, 1991, 12p

Sponsored by Office of Naval Research, Arlington, VA. Pub. in Jnl. of Materials Science 26, p2157-2168 1991.

Not available NTIS PB91-237131 National Inst. of Standards and Technology (MSEL), Gaithersburg, MD. Ceramics Div. Cathodoluminescence Measurement of Strained

Alumina Single Crystals. Final rept.

C. P. Ostertag, L. H. Robins, and L. P. Cook. 1991,

Pub. in Jnl. of the European Ceramic Society 7, p109-116 1991.

Not available NTIS PB91-237339 National Bureau of Standards (IMSE), Gaithersburg, MD. Ceramics Div.

### Ceramics, Refractories, & Glass

New Layered Cuprate Structure-Type, (A1xA'x)14Cu24O41.

Final rept.

T. Siegrist, L. F. Schneemeyer, R. S. Roth, J. V. Waszczak, and S. A. Sunshine. 1988, 10p Pub. in Materials Research Bulletin 23, n10 p1429-1438 1988.

PB91-237628 Not available NTIS National Inst. of Standards and Technology (IMSE), Gaithersburg, MD. Polymers Div.

Fourier Transform Infrared Analysis of Ceramic Powders: Quantitative Determination of Alpha, Beta, and Amorphous Phases of Silicon Nitride. Final rept.

T. K. Trout, R. A. Faltynek, F. E. Brinckman, and J. M. Bellama. 1989, 5p

Pub. in Jnl. of Materials Research 4, n2 p399-403

PB91-237743 Not available NTIS National Inst. of Standards and Technology (MSEL), Gaithersburg, MD. Ceramics Div.

Environmentally Enhanced Fracture of Gallium Arsenide. Final rept

G. S. White, S. W. Freiman, and A. M. Wilson. 1989, 3p Contract N00014-87-F-0007

Sponsored by Office of Naval Research, Arlington, VA. Pub. in Jnl. of the American Ceramic Society 72, n11 p2193-2195 Nov 89.

Not available NTIS PB92-116797 National Inst. of Standards and Technology (NML), Boulder, CO. Chemical Engineering Science Div. Design and Fabrication of a Miniature High-Temperature Guarded-Hot-Plate Apparatus. Final rept.

B. J. Filla. 1990, 8p

Pub. in Proceedings of International Thermal Conductivity Conference (21st), Lexington, KY., October 15-18, 1989, p67-74 1990.

Not available NTIS National Inst. of Standards and Technology (MSEL), Gaithersburg, MD. Ceramics Div. Test Method for Tensile Creep of Structural Ce-

ramics Using Flexure Beams.

R. F. Krause, and T. J. Chuang. 1991, 10p Pub. in Ceramics Today - Tomorrow's Ceramics, p1865-1874 1991.

PB92-117001 Not available NTIS National Inst. of Standards and Technology (MSEL), Gaithersburg, MD. Reactor Radiation Div. Characterization of the Densification of Alumina

by Multiple Small-Angle Neutron Scattering. Final rept.

S. Krueger, G. G. Long, and R. A. Page. 1991, 9p Contracts MIPR-ARO-102-90, DE-FG05-84ER45063 Sponsored by Army Research Office, Research Triangle Park, NC., and Department of Energy, Washington, DC.

Pub. in Acta Crystollagraphica A47, p282-290 1991.

PB92-117043 Not available NTIS National Inst. of Standards and Technology (MSEL), Gaithersburg, MD. Ceramics Div.

Effect of Green Density and the Role of Magnesium Oxide Additive on the Densification of Alumina Measured by Small-Angle Neutron Scattering.

Final rept. G. G. Long, S. Krueger, and R. A. Page. 1991, 7p Pub. in Jnl. of the American Ceramic Society 74, n7 p1578-1584 Jul 91.

PB92-117357 Not available NTIS National Inst. of Standards and Technology (NML), Boulder, CO. Chemical Engineering Science Div. Apparent Thermal Conductivity of Fumed-Sillca Standard Reference Materials. Final rept.

D. R. Smith. 1990, 16p Contract ORNL/IA-21428

Sponsored by Oak Ridge National Lab., TN.
Pub. in Proceedings of International Thermal Conductivity Conference (21st), Lexington, KY., October 15-18, 1989, p261-276 1990.

Not available NTIS PB92-117449 National Inst. of Standards and Technology (MSEL), Gaithersburg, MD. Ceramics Div.

Effect of Surface Forces on Subcritical Crack

Growth in Glass.

Final rept.

S. M. Wiederhorn, and E. R. Fuller. 1989, 4p Pub. in Jnl. of the American Ceramic Society 72, n2

p248-251 Feb 89.

PB92-126507 PC A09/MF A02 National Inst. of Standards and Technology (MSEL), Gaithersburg, MD. Ceramics Div. Ceramics: Technical Activities 1991. (NAS-NRC As-

sessment Panel, February 13-14, 1992). Annual rept.

S. W. Freiman. Feb 92, 176p NISTIR-4694

See also PB91-132233.

PC A05/MF A01 PB92-126564 National Inst. of Standards and Technology (EEEL), Boulder, CO. Electromagnetic Technology Div High-Temperature Superconductivity: Abstracts of NIST Publications, 1987-1991. Final rept.

M. E. DeWeese. Nov 91, 93p NIST/SP-826 Also available from Supt. of Docs. Supersedes PB89-148340.

Not available NTIS PB91-203729 National Bureau of Standards (NEL), Gaithersburg, MD. Building Materials Div.

Characterization of Epoxide Coatings on Steel by Reflection/Absorption Fourier Transform Infrared Spectroscopy: Quantitative Study.

Final rept.

T. Nguyen, W. E. Byrd, and D. P. Bentz. 1988, 18p See also PB88-175518.

Pub. in Proceedings of FATIPEC Congress (19th), v2 p229-246 1988.

PB91-204073 Not available NTIS National Inst. of Standards and Technology (IMSE), Gaithersburg, MD. Metallurgy Div. Magnetic Properties of Iron/Silica Gel Nanocom-

posites. Final rept.

R. D. Shull, J. J. Ritter, A. J. Shapiro, L. J. Swartzendruber, and L. H. Bennett. 1989, 6p Pub. in Materials Research Society Symposium Proceedings, v132 p179-184 1989.

PB91-237669 Not available NTIS National Inst. of Standards and Technology (MSEL), Gaithersburg, MD. Ceramics Div.

Variations in the Practice of Ceramic Technology in Different Cultures: A Comparison of Korean and Chinese Celadon Glazes.

Final rept. P. B. Vandiver, L. A. Cort, and C. A. Handwerker. 1989, 42p

Pub. in Ceram. Civiliz. 4, p347-388 1989.

Not available NTIS PB92-116813 National Bureau of Standards (IMSE), Gaithersburg, MD. Ceramics Div.

Heat Conductivity of Oxide Coatings by Photothermal Radiometry between 293 and 1173 K.

Final rept.

H. P. R. Frederikse, and X. T. Ying. 1988, 4p Pub. in Applied Optics 27, n22 p4672-4675 1988.

### Coatings, Colorants, & Finishes

AD-A243 095/7 PC A03/MF A01 National Inst. of Standards and Technology, Gaithersburg, MD. Chemical Vapor Deposited Diamond.

Technical rept.

A. Feldman, E. N. Farabaugh, and L. H. Robins. 27 Sep 91, 50p Contract N00014-90-F-0011

PB91-167395 PC A05/MF A01 National Inst. of Standards and Technology (MSEL), Gaithersburg, MD. U.S. Assessment of the New Diamond Technology

in Japan.

Special pub. (Final). A. Feldman, and L. H. Schwartz. Jan 91, 100p NIST/ SP-807

Also available from Supt. of Docs. as SN003-003-

PR91-195248 Not available NTIS National Bureau of Standards (NEL), Gaithersburg, MD. Building Materials Div.

Fourier Transform Infrared Spectroscopic Studies of the Degradation of One-Component Polyether Polyurethane Protective Coatings on Steel. Final rept.

T. Nguyen, and W. E. Byrd. 1988, 20p Pub. in Proceedings of FATIPEC Congress (19th), v3 p255-274 1988.

### Composite Materials

AD-A231 778/2 PC A03/MF A01 National Inst. of Standards and Technology (IMSE), Gaithersburg, MD. Metallurgy Div. Influence of Water on the Mechanical Properties of a Glass-Epoxy Matrix Composite. Technical rept. 1 Feb 89-1 Feb 91. M. R. Stoudt, E. Escalante, and R. E. Ricker. 12 Feb

91, 14p

Contract N00014-89-F-0072

AD-A239 509/3 PC A03/MF A01 National Inst. of Standards and Technology (MSEL), Gaithersburg, MD. Corrosion Group.

Influence of Molsture and Pressure on the Mechanical Properties of a Glass-Epoxy Matrix Composite and a Graphite-Epoxy Matrix Composite. Technical rept. no. 2, 1 Feb 89-1 Feb 91. M. R. Stoudt, E. Escalante, and R. E. Ricker. Jul 91,

30p

Contract N00014-89-F-0072

PB91-132191 PC A05/MF A01 National Inst. of Standards and Technology (MSEL), Gaithersburg, MD.

Polymer Composite Processing, Industry Workshop (2nd). Held at Gaithersburg, Maryland on May 18, 1990.

C. Johnson, S. S. Chang, and D. Hunston. Dec 90, 87p NISTIR-4461 See also PB88-179882.

### Composite Materials

PB91-147090 Not available NTIS National Inst. of Standards and Technology (MSEL), Gaithersburg, MD. Polymers Div.
Effect of Logarithmic Singularity on the Free Edge

Stress Intensity Factor of Composite Laminates.

M. Y. M. Chiang, and H. K. Stolarsky. 1990, 14p Pub. in Proceedings of Technical Conference on Com-posite Materials (5th), East Lansing, Ml., June 11-14, 1990, p336-349.

PB91-159178 Not available NTIS National Inst. of Standards and Technology (MSEL), Gaithersburg, MD. Metallurgy Div.
Spin Glass Magnetic Behavior of Iron/Silica Gel Nanocomposites.

Final rept.

R. D. Shull, and J. J. Ritter. 1990, 6p Pub. in Materials Research Society Symposium Proceedings, v195 p435-440 1990.

PB91-162180 Not available NTIS National Inst. of Standards and Technology (IMSE), Boulder, CO. Fracture and Deformation Div. Mechanical Properties of Alumina-Peek Unidirectional Composite: Compression, Shear, and Tension. Final rept.

Final rept.

R. D. Kriz, and J. D. McColskey. 1990, 7p
Sponsored by National Aeronautics and Space Administration, Moffett Field, CA. Ames Research Center.

Pub. in Advances in Cryogenic Engineering (Materials) 36, p921-927 1990.

PB91-174656 Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Ionizing Radiation Div. Emissivity of Aluminized Mylar. Final rept.

S. R. Domen. 1991, 3p Pub. in Radiation Physics and Chemistry 37, n2 p199-201 1991.

PB91-174946 Not available NTIS National Inst. of Standards and Technology (MSEL), Boulder, CO. Fracture and Deformation Div.

Numerical Simulation and Visualization Models of Stress Wave Propagation Graphite/Epoxy Composites. Final rept.

P.D. Kriz, and J. M. Gary. 1990, 8p Pub. in Review of Progress in Quantitative Nonde-structive Evaluation, v9 p125-132 1990.

PC A09/MF A01 PB91-185116 National Inst. of Standards and Technology (MSEL), Boulder, CO. Materials Reliability Div. Effect of a Free Surface on Stress Distribution in a Bimaterial Composite.

Special pub. (Final). V. K. Tewary, and R. D. Kriz. Mar 91, 186p NIST/SP-802

Also available from Supt. of Docs.

PB91-187336 Not available NTIS National Inst. of Standards and Technology (IMSE), Gaithersburg, MD. Polymers Div.
Interlaminar Shear Fracture of Laminated Com-

posites. Final rept H. Chai. 1990, 15p

Pub. in International Jnl. of Fracture 43, p117-131 1990.

Elastic Constants of Fiber-Reinforced Composites: A Fresh Measurement Approach. Final rept.

Pub. in Proceedings of Ultrasonics Symposium, Hono-lulu, H., December 4-7, 1990, p1267-1269.

PB91-195362 Not available NTIS National Inst. of Standards and Technology (IMSE), Gaithersburg, MD. Ceramics Div.

Reduction in Sintering Damage of Fiber Rein-

forced Composites. Final rept.

C. P. Ostertag. 1990, 8p

Pub. in Ceramic Transactions 7, p745-752 1990.

PB91-202952 Not available NTIS National Bureau of Standards (IMSE), Gaithersburg, MD. Ceramics Div.

Effect of Thermal Expansion Mismatch on Fiber Pull-Out in Glass Matrix Composites. Final rept.

U. V. Deshmukh, A. Kanei, S. W. Freiman, and D. C. Cranmer. 1988, 6p

Pub. in Materials Research Society Symposium Proceedings, v120 p253-258 1988.

PB91-203059 Not available NTIS National Inst. of Standards and Technology (IMSE), Boulder, CO. Fracture and Deformation Div. Monitoring of Anisotropic Material Elastic Properties Using Ultrasonic Receiving Rays. Final rept.

D. W. Fitting, and A. V. Clark. 1989, 8p Sponsored by National Research Council of Canada, Ottawa (Ontario).

Pub. in Proceedings of International Symposium on Nondestructive Characterization of Materials (3rd), Saarbruchen, FRG, October 3-6, 1988, p91-98 1989.

PB91-203687 Not available NTIS National Bureau of Standards (IMSE), Gaithersburg, MD. Ceramics Div.

Role of Glassy Interfaces in High Temperature Crack Growth in SiC Fiber Reinforced Alumina. Final rept.

S. V. Nair, K. Jakus, and C. Ostertag. 1988, 6p
Pub. in Proceedings of Annual Conference on Composites and Advanced Ceramic Materials (12th), p681-686 1988

PB91-237123 Not available NTIS National Inst. of Standards and Technology (MSEL), Gaithersburg, MD. Ceramics Div. Differential Sintering.

Final rept. C. Ostertag. 1991, 7p Pub. in Science of Sintering, p453-459 1991.

PB91-237321 Not available NTIS National Inst. of Standards and Technology (IMSE), Gaithersburg, MD. Fracture and Deformation Div. Change in Magnetic State of Fe+Silica Gel Nanocomposites Due to Low Temperature Treatment in Ammonia.

Final rept. R. D. Shull, J. J. Ritter, and L. J. Swartzendruber. 1991, 3p

Pub. in Jnl. of Applied Physics 69, n8 p5144-5146, 15

PB91-194878 Not available NTIS National Inst. of Standards and Technology (MSEL), Boulder, CO. Fracture and Deformation Div.

Not available NTIS National Inst. of Standards and Technology (CSTL), Boulder, CO. Chemical Engineering Div.

Thermal Conductivity of Alumina Fiber/Epoxy and Alumina Fiber/PEEK from 4.2 to 310 K.

in a Vitreous Alumina Gel.

D. L. Rule, and L. L. Sparks. 1990, 15p See also PB89-218358. Pub. in Proceedings of International Thermal Conduc-tivity Conference (21st), Lexington, KY., October 15-18, 1989, p671-685 1990.

PB92-117332 Not available NTIS National Inst. of Standards and Technology (MSEL), Gaithersburg, MD. Metallurgy Div. Magnetic Behavior of Nanocomposites Prepared

Final rept. R. D. Shull, J. J. Ritter, A. J. Shapiro, L. J. Swartzendruber, and L. H. Bennett. 1991, 6p Pub. in Materials Research Society Stmposia Proceedings, v206 p455-460 1991.

#### Corrosion & Corrosion Inhibition

PB91-134700 Not available NTIS National Bureau of Standards (IMSE), Gaithersburg, MD. Metallurgy Div.
Corrosion, Repassivation and Corrosion Fatigue

Behavior of the Surgical Implant Alloy, Co-Cr-Mo. Final rept.

P. Sung, and A. C. Fraker. 1987, 10p
Pub. in Proceedings of Conference on Environmental
Degradation of Engineering Materials III, University Park, PA., April 13-15, 1987, p471-480.

PB91-149047 Not available NTIS National Bureau of Standards (IMSE), Gaithersburg, MD. Metallurgy Div.

Cleavage Step Formation and Resistance to Transgranular Stress Corrosion Cracking. Final rept.

E. N. Pugh, and M. J. Kaufman. 1986, 11p Pub. in Proceedings of Materials Technology Con-gress, Adelaide, Australia, May 19-21, 1986, v2 p1-11.

PB91-150078 Not available NTIS National Inst. of Standards and Technology (IMSE), Gaithersburg, MD. Metallurgy Div. Concepts of Underground Corrosion. Final rept.

Pub. in Effects of Soil Characteristics on Corrosion, ASTM STP 1013, p81-94 1989.

PB91-158667 Not available NTIS National Bureau of Standards (IMSE), Gaithersburg, MD. Metallurgy Div. Corrosion Testing in Soil.

Final rept.

E. Escalante. 1987, 4p Pub. in Metals Handbook, v13 p208-211 1987.

PB91-174714 Not available NTIS National Inst. of Standards and Technology (MSEL), Gaithersburg, MD. Metallurgy Div.

Measuring the Corrosion of Metals in Soil.

Final rept. E. Escalante, 1990, 13p

Pub. in Corrosion Testing and Evaluation: Silver Anniversary Volume, ASTM STP 1000, p112-125 1990.

PB91-175182 Not available NTIS National Inst. of Standards and Technology (MSEL), Gaithersburg, MD. Metallurgy Div.

### **Corrosion & Corrosion Inhibition**

Stress Corrosion Cracking of Al-Li Alloys: The Role of Grain Boundary Precipitates.

Final rept.

R. E. Ricker, J. L. Fink, and A. K. Vasudevan. 1991, 4p

Pub. in Metallurgical Transactions A 22A, p264-267

Jan 91

PB91-187690 PC A03/MF A01 National Inst. of Standards and Technology (BFRL), Gaithersburg, MD.

Chloride Ion Diffusion in Low Water-to-Solid Cement Pastes.

J. R. Clifton, L. I. Knab, E. J. Garboczi, and L. X. Xiong. Apr 91, 31p NISTIR-4549

Prepared in cooperation with Shanghai Research Inst. (China). Sponsored by Nuclear Regulatory Commission, Washington, DC.

PB91-203588 Not available NTIS National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Building Materials Div.

Detection and Quantitative Characterization of Bilstering and Corrosion of Coatings on Steel Using Infrared Thermography.

Final rept.

M. E. McKnight, and J. W. Martin. 1989, 6p

Contract NCEL-86WR60188

Sponsored by Naval Civil Engineering Lab., Port Hueneme, CA.

Pub. in Jnl. of Coatings Technology 61, n775 p57-62 Aug 89.

### **Elastomers**

PB91-132167 PC A03/MF A01 National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Center for Fire Research.

Reduction of Hydrogen Cyanide Concentrations and Acute Inhalation Toxicity from Flexible Polyurethane Foam Combustion Products by the Addition of Copper Compounds. Part 3. The Effect of Copper Additives on the Flammability Characteristics of Flexible Polyurethane Foam.

B. C. Levin, E. Braun, J. R. Shields, and D. Lowe. Oct 90, 39p NISTIR-4441

Sponsored by International Copper Research Association, Inc., New York, and Society of the Plastics Industry, Inc., New York.

PB91-195081 Not available NTIS National Bureau of Standards (IMSE), Gaithersburg, MD. Polymers Div.

Mechanical and Swelling Behavior of Crosslinked Natural Rubber: Consequences of the Flory-Rehner Hypothesis.

Final rept.

G. B. McKenna, K. M. Flynn, and Y. Chen. 1988, 4p Pub. in Polymer Communications 29, n9 p272-275 Sep

#### Fibers & Textiles

PC A02/MF A01 AD-A236 708/4 National Inst. of Standards and Technology (IMSE), Gaithersburg, MD. Ceramics Div.

Effects of Multiple Filament Geometry in the Hot Filament Deposition of Diamond Films. Interim rept.

E. N. Farabaugh, A. Feldman, and L. H. Robins. 12 Apr 91, 9p

Contract N00014-90-F-0011

PB91-149948 Not available NTIS National Inst. of Standards and Technology (NML), Boulder, CO. Chemical Engineering Science Div. Round Robin on Apparent Thermal Conductivity of Several Loose-Fill Insulations.

Final rept. R. D. Adams, and J. G. Hust. 1990, 27p Sponsored by Oak Ridge National Lab., TN. Pub. in Insulation Materials, Testing, and Applications, ASTM STP 1030, p263-289 1990.

### Iron & Iron Alloys

N91-20218/4

(Order as N91-20207/7, PC A05/MF A01) National Bureau of Standards (IMSE), Gaithersburg, MD

Low Carbon Steel: Metallurgical Structure vs. Mechanical Properties.

R. D. Shull. Jan 90, 4p

In NASA, Langley Research Center, National Educators' Workshop: Update 1988. Standard Experiments in Engineering Materials Science and Technology p 47-50

PB91-134627 Not available NTIS National Inst. of Standards and Technology (IMSE), Boulder, CO. Fracture and Deformation Div. Cryogenic Material Properties of Stainless Steel Tube-to-Flange Welds.

Final rept.

T. A. Siewert, C. N. McCowan, and D. P. Vigliotti. 1990. 9p

Pub. in Cryogenics 30, p356-364 Apr 90.

PB91-147686 Not available NTIS National Bureau of Standards (NEL), Gaithersburg, MD. Building Materials Div.

Roughness Measures of Blasted Steel Surfaces Remotely Imaged with a Thermographic Camera. Final rept

J. W. Martin, and D. P. Bentz. 1987, 18p Pub. in Proceedings of Symposium on Corrosion Pro-tection by Organic Coatings, v87-2 p179-196 1987.

Not available NTIS PB91-148106 National Bureau of Standards (IMSE), Gaithersburg, MD. Metallurgy Div. Study of the Galling of Two Steels Using Two Test

Methods.

Final rept. P. A. Swanson, L. K. Ives, E. P. Whitenton, and M. B. Peterson. 1988, 17p

Pub. in Wear 122, n2 p207-223, 1 Mar 88.

Not available NTIS National Inst. of Standards and Technology (MSEL), Boulder, CO. Fracture and Deformation Div.

Fracture Toughness of 316L Stainless Steel Welds with Varying Inclusion Contents at 4 K.

C. N. McCowan, and T. A. Siewert. 1990, 8p Sponsored by Department of Energy, Washington, DC. Pub. in Advances in Cryogenic Engineering (Materials), v36 p1331-1338 1990.

PB91-167171 PC A03/MF A01 National Inst. of Standards and Technology (MSEL),

Gaithersburg, MD. Metallurgy Div.

Examination of the Excessive Retained Austenite on the Surface of a Section of 17-7 Precipitation Hardening Stainless Steel.

G. E. Hicho, W. J. Boettinger, L. Swartzendruber, and T. R. Shives. Jan 91, 32p NISTIR-4502

PC A03/MF A01 PB91-167346 National Inst. of Standards and Technology (MSEL), Gaithersburg, MD. Metallurgy Div.

Crack Arrest Fracture Toughness Measurements of Normalized and Inclusion Shape Controlled AAR TC128 Grade B Steel, and Micro-Alloyed, Control-Rolled, and Inclusion Shape Controlled A 8XX Grade B Steel.

G. E. Hicho. Feb 91, 18p NISTIR-4501, REPT-21

PB91-175372 Not available NTIS National Inst. of Standards and Technology (IMSE), Boulder, CO. Fracture and Deformation Div Effect of Nitrogen and Carbon on FCC-HCP Stabili-

ty in Austenitic Steels.

Final rept.

R. P. Reed, and M. W. Austin. 1989, 4p.

Pub. in Scripta Metallurgica 23, n8 p1359-1362 1989.

PB91-175448 Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Surface Science Div. Mechanical Sputtering of Structural Stainless

Steels. Final rept.

T. Nenadovic, N. Popovic, and J. Fine, 1989, 8p. Pub. in Jnl. of Materials Science 24, p3699-3706 1989.

PC A03/MF A01 PB91-184747 National Inst. of Standards and Technology (MSEL), Boulder, CO. Materials Reliability Div.

Microstructure, Composition, and Hardness of Rockwell C Hardness Blocks.

T. A. Siewert, and A. Tomer. Jan 91, 26p NISTIR-3960

PB91-184838 PC A03/MF A01 National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Center for Fire Research.

Prediction of Elevated Temperature Deformation of Structural Steel under Anisothermal Conditions. B. A. Fields, and R. J. Fields. Jan 91, 46p NISTIR-

Sponsored by American Iron and Steel Inst., Washington, DC

PB91-187856 PC A03/MF A01 National Inst. of Standards and Technology (MSEL), Boulder, CO. Materials Reliability Div.

Continuous-Cooling Transformation Characteristics and High-Temperature Flow Behavior of a Microalloyed SAE 1141 Steel.

Y. W. Cheng, and A. Tomer. Feb 91, 39p NISTIR-

Prepared in cooperation with Israel Atomic Energy Commission, Beersheba. Nuclear Research Center-

PB91-189464 Not available NTIS National Bureau of Standards (IMSE), Gaithersburg, MD. Metallurgy Div.

### Iron & Iron Alloys

Effects of Varying Austenitizing Temperature and Cooling Rate on the Ability of HSLA-80 Steel to Achieve a Yield Strength Comparable to HSLA-100.

Final rept.

G. E. Hicho, and R. J. Fields. 1988, 9p Sponsored by David Taylor Research Center, Bethesda. MD.

Pub. in Jnl. of Heat Treating 6, n2 p77-85 1988.

PB91-189944 Not available NTIS National Inst. of Standards and Technology (MSEL), Boulder, CO. Fracture and Deformation Div. Influence of Interstitial Content on Fracture Toughness.

Final rept.

P. T. Purtscher, and R. P. Reed. 1989, 5p Pub. in Proceedings of International Conference on High Nitrogen Steels, Lille, France, May 18-20, 1988, p189-193 1989.

PB91-189951 Not available NTIS National Inst. of Standards and Technology (MSEL), Boulder, CO. Fracture and Deformation Div. Metallographic Study of the Crack-Tip Region from Fracture Mechanics Specimens of Austenitic and Ferritic Steels.

Final rept. P. T. Purtscher, R. P. Reed, and D. K. Matlock. 1989, 6р

Sponsored by Department of Energy, Washington, DC. Pub. in Proceedings of MRS International Meeting on Advanced Materials, Tokyo, Japan, May 31-June 4, 1988, p391-396 1989.

PB91-189977 Not available NTIS National Inst. of Standards and Technology (MSEL), Boulder, CO. Fracture and Deformation Div.

Discontinuous Yielding during Tensile Tests at Low Temperatures.

Final rept. R. P. Reed, and N. J. Simon, 1990, 10p Sponsored by Department of Energy, Washington, DC. Pub. in Advances in Cryogenic Engineering, v36 p1077-1086 1990.

Not available NTIS Not available NTIS
National Inst. of Standards and Technology (NML),
Boulder, CO. Chemical Engineering Science Div.
High-Temperature Thermal Properties of UNS
S44004 Using Multivariant Analysis. Final rept.

L. J. Freiberger, and J. W. Bransford. 1990, 10p Sponsored by National Aeronautics and Space Administration, Huntsville, AL. George C. Marshall Space Flight Center.

Pub. in Advanced Earth-to-Orbit Propulsion Technology 1990, vl p113-122.

PB91-195321 Not available NTIS National Inst. of Standards and Technology (IMSE), Gaithersburg, MD. Polymers Div.

Galinersburg, MD. Forginers Div.

Rate of Pyrite Bioleaching by 'Thiobacillus ferrooxidans': Results of an Interlaboratory Comparison. Final rept.

G. J. Olson. 1991, 3p Pub. in Applied and Environmental Microbiology 57, n3 p642-644 Mar 91.

Not available NTIS National Inst. of Standards and Technology (IMSE), Gaithersburg, MD. Polymers Div.
Characterization by High Performance Liquid
Chromatography (HPLC) of the Solubilization of

Phosphorus in Iron Ore by a Fungus. Final rept.

E. J. Parks, G. J. Olson, F. E. Brinckman, and F. Baldi. 1990, 7p

Pub. in Jnl. of Industrial Microbiology 5, n2-3 p183-189 1990.

PB91-195529 Not available NTIS National Inst. of Standards and Technology (MSEL), Boulder, CO. Fracture and Deformation Div. Nitrogen Strengthening of Austenitic Stainless Steels at Low Temperatures.

R. P. Reed, and N. J. Simon. 1989, 9p Sponsored by Department of Energy, Washington, DC. Pub. in Proceedings of International Conference on High Nitrogen Steels, Lille, France, May 18-20, 1988, p180-188 1989.

Final rept.

PB91-236505 Not available NTIS National Inst. of Standards and Technology (MSEL), Boulder, CO. Materials Reliability Div. Spatially Overdetermined Analysis for Propagation Toughness Using Strain Gages. Final rept.

J. R. Berger, and J. W. Dally. 1990, 7p. Pub. in Mechanics Research Communications 17, n2 p93-99 1990.

PB91-236943 Not available NTIS National Inst. of Standards and Technology (MSEL), Boulder, CO. Materials Reliability Div. Load-Controlled Tensile Tests of Austenitic Steels at 4 K.

H. M. Lee, R. P. Reed, and J. K. Han. 1990, 10p

Sponsored by Department of Energy, Washington, DC Pub. in Advances in Cryogenic Engineering (Materials), v36 p1273-1282 1990.

PB91-237081 Not available NTIS National Inst. of Standards and Technology (MSEL), Boulder, CO. Materials Reliability Div.

Interlaboratory Tension and Fracture Toughness Test Results for CSUS-JN1 (Fe-25Cr-15Ni-0.3N) Austenitic Stainless Steel at 4 K.

Final rept. H. Nakajima, K. Yoshida, S. Shimamoto, R. L. Tobler, R. P. Reed, R. P. Walsh, and P. T. Purtscher. 1990, 8p

Sponsored by Department of Energy, Washington, DC. Office of Fusion Energy.
Pub. in Advances in Cryogenic Engineering (Materi-

als), v36 p261-268 1990.

PB91-237206 Not available NTIS National Inst. of Standards and Technology (MSEL), Boulder, CO. Materials Reliability Div. Effect of Processing on 4-K Mechanical Properties of a Microalloyed Austenitic Stainless Steel.

Final rept. P. T. Purtscher, M. C. Mataya, L. M. Ma, and R. P.

Reed. 1990, 8p Sponsored by Department of Energy, Washington, DC.

Office of Fusion Energy.

Pub. in Advances in Cryogenic Engineering (Materials), v36 p79-86 1990.

PB91-237248 Not available NTIS National Inst. of Standards and Technology (MSEL), Boulder, CO. Materials Reliability Div.

Strain Rate Effect on Tensile Properties at 4 K of a VAMAS Round-Robin Austenitic Steel. Final rept.

R. P. Reed, R. P. Walsh, and R. L. Tobler. 1990, 8p Pub. in Cryogenic Engineering (Materials), v36 p1061-1068 1990.

PB92-108901 PC A03/MF A01 National Inst. of Standards and Technology (MSEL), Gaithersburg, MD. Metallurgy Div. Mechanical Properties and Fracture Toughness of AAR TC128 Grade B Steel in the Normalized, and Normalized and Stress Relieved Conditions. G. E. Hicho, and D. E. Harne. Sep 91, 46p NISTIR-4660, REPT-24

See also PB90-207796.

Not available NTIS PB92-116615 National Inst. of Standards and Technology (MSEL), Boulder, CO. Fracture and Deformation Div.

Ultrasonic Measurement of Sheet Steel Texture and Formability: Comparison with Neutron Diffraction and Mechanical Measurements. Final rept.

A. V. Clark, R. B. Thompson, Y. Li, R. C. Reno, G. V. Blessing, D. V. Mitrakovic, R. E. Schramm, and D. Matlock. 1990, 19p Pub. in Research in Nondestructive Evaluation 2, p239-257 1990.

PB92-126515 PC A07/MF A02 National Inst. of Standards and Technology (MSEL),

Gaithersburg, MD. Metallurgy Div.

Metallurgy Division, Technical Activities 1991.
(NAS-NRC Assessment Panel February 13-14, 1992).

Annual rept. 1 Oct 90-30 Sep 91.

E. N. Pugh, and S. C. Hardy. Dec 91, 136p NISTIR-

See also PB91-132225.

### **Lubricants & Hydraulic Fluids**

PB91-158808 Not available NTIS National Bureau of Standards (IMSE), Gaithersburg, MD. Ceramics Div.

Mechanisms of Additive Effectiveness.

Final rept.

S. M. Hsu, P. Pei, C. S. Ku, R. S. Lin, and S. T. Hsu. 1986 10p

Sponsored by Department of Energy, Washington, DC. Pub. in Proceedings of International Colloquim Additives for Lubricants and Operational Fluids (5th), January 14-16, 1986, p3.14-1-3.14-10.

PB91-158923 Not available NTIS National Inst. of Standards and Technology (IMSE), Gaithersburg, MD. Ceramics Div. Heats of Immersion, Friction, and Wear of Base Oil Fractions.

Final rept.

F. E. Lockwood, K. Bridger, and S. M. Hsu. 1989,

Pub. in Tribology Transactions 32, n4 p506-516 1989.

PB91-174862 Not available NTIS National Inst. of Standards and Technology (IMSE), Gaithersburg, MD. Ceramics Div. Mechanisms of Additive Effectiveness.

Final rept. S. M. Hsu, P. Pei, C. S. Ku, R. S. Lin, and S. T. Hsu. 1989, 20p

Sponsored by Department of Energy, Washington, DC. Pub. in Lubrication Science 1, n2 p165-184 Jan 89.

PB91-174953 Not available NTIS National Bureau of Standards (IMSE), Gaithersburg, MD. Ceramics Div.

Study of Additive Response in a Series of Rere-fined Base Oils Typical of Current Commercial Practice. Final rept.

C. S. Ku, E. E. Klaus, and S. M. Hsu. 1985, 13p Pub. in Proceedings of European Tribology Congress (4th), Ecully, France, September 9-12, 1985, v1 p1-13.

PB91-189407 Not available NTIS National Inst. of Standards and Technology (IMSE), Gaithersburg, MD. Ceramics Div.

### Lubricants & Hydraulic Fluids

Study on the Nature of Boundary Lubricating Film: Analytical Method Development. Final rept.

R. S. Gates, S. M. Hsu, and K. L. Jewett. 1989, 8p Sponsored by Department of Energy, Washington, DC. Energy Conversion and Utilization Technologies Div. Pub. in Tribology Transactions 32, n4 p423-430 1989.

PB91-189480 Not available NTIS National Inst. of Standards and Technology (IMSE), Gaithersburg, MD. Ceramics Div.

Mechano-Chemical Descriptive Model for Wear

Under Mixed Lubrication Conditions. Final rept.

S. M. Hsu, E. E. Klaus, and H. S. Cheng. 1988, 17p. Sponsored by Department of Energy, Washington, DC. Office of Basic Energy Sciences.

Pub. in Wear 128, n3 p307-323, 15 Dec 88.

PB91-195412 Not available NTIS National Inst. of Standards and Technology (IMSE), Gaithersburg, MD. Ceramics Div.

Diesei Deposit Forming Tendencies - Microanalysis Methods.

Final rept.

J. M. Perez, P. Pei, Y. Zhang, and S. M. Hsu. 1991,

10p

Sponsored by Department of Energy, Washington, DC. Pub. in SAE Technical Paper Series 910750 International Congress and Exposition, Detroit, MI., February 25-March 1, 1991, p1-10.

PB91-203810 Not available NTIS National Inst. of Standards and Technology (MSEL), Gaithersburg, MD. Ceramics Div.

Characterization of Tricresylphosphate Lubricating Films by Micro-Fourier Transform Infrared Spectroscopy.

Final rept. J. M. Perez, C. S. Ku, P. Pei, B. E. Hegemann, and

S. M. Hsu. 1990, 9p Pub. in Tribology Transactions 33, n1 p131-139 1990.

PB91-236711 Not available NTIS National Inst. of Standards and Technology (MSEL), Gaithersburg, MD. Ceramics Div.

Effect of Selected Chemical Compounds on the Lubrication of Silicon Nitride.

Final rept. R. S. Gates, and S. M. Hsu. 1991, 9p

Sponsored by Department of Energy, Washington, DC. Energy Conversion and Utilization Technologies Pro-

gram.
Pub. in Tribology Transactions 34, n3 p417-425 1991.

### **Materials Degradation & Fouling**

PC A03/MF A01 National Inst. of Standards and Technology (IMSE), Gaithersburg, MD. Polymers Div.

Studies on the Degradation Products of Paper with and without Pollutants in a Closed Environment. 1.

Preliminary Results.
E. J. Parks, C. M. Guttman, K. L. Jewett, and F. E. Brinckman. Dec 90, 47p NISTIR-4456
Sponsored by National Archives and Records Admin-

istration, Washington, DC.

PC A03/MF A01 PB91-144345 National Inst. of Standards and Technology (MSEL), Gaithersburg, MD. Polymers Div.

Synthesis of Prototype Resins for Use as BEP Intaglio Ink Vehicles Curing by Electron Beam Radi-

Annual rept.

B. J. Bauer, and B. Dickens. Dec 90, 45p NISTIR-4474

Sponsored by Bureau of Engraving and Printing, Washington, DC.

PB91-159269 Not available NTIS National Bureau of Standards (IMSE), Gaithersburg, MD. Metallurgy Div.

Method for Quantitative Measurement of Galling

Damage.

Final rept

Final rept.
E. P. Whitenton, M. B. Peterson, and L. K. Ives.
1987, 16p
Pub. in Proceedings of Metal Transfer and Galling in
Metallic Systems Symposium, Orlando, FL., October
8-9, 1986, p155-170 1987.

PB91-174904 Not available NTIS National Inst. of Standards and Technology (IMSE), Gaithersburg, MD. Ceramics Div.
ACTIS: Towards a Comprehensive Tribology Data

Base.

Final rept.

S. Jahanmir, S. M. Hsu, and R. G. Munro. 1989, 9p Pub. in Computerization and Networking of Materials Data Bases, ASTM STP 1017, p340-348 1989.

PR91-187328 Not available NTIS National Bureau of Standards (NML), Gaithersburg, MD. Inorganic Analytical Research Div. Method to Enhance Porosity of Micro-particles. Final rept.

B. S. Carpenter, L. C. Sander, C. Horvath, and W. R. Brown. 1988, 9p

Pub. in Jnl. of Radioanalytical and Nuclear Chemistry 124, n2 p523-531 1988.

Not available NTIS PB91-189530 National Inst. of Standards and Technology (IMSE), Gaithersburg, MD. Ceramics Div.
Tribological Characteristics of Synthesized Diamond Films on Sillcon Carbide.

Final rept. S. Jahanmir, L. K. Ives, A. Feldman, E. Farabaugh, and D. E. Deckman. 1989, 9p Pub. in Wear 133, n1 p73-81 1989.

PB91-190017 Not available NTIS National Inst. of Standards and Technology (IMSE), Gaithersburg, MD. Ceramics Div

Comparison of Standard Test Methods for Non-Lubricated Sliding Wear. Final rept.

A. W. Ruff. 1989, 9p Pub. in Wear 134, n1 p49-57 1989.

Not available NTIS PB91-190025 National Inst. of Standards and Technology (MSEL), Gaithersburg, MD. Ceramics Div. Sliding Wear Studies of Nickel-Copper Composition-Modulated Coatings on Steel. Final rept.

A. W. Ruff, and Z. X. Wang. 1989, 14p Pub. in Wear 131, n2 p259-272 1989.

### Miscellaneous Materials

Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Thermophysics Div. Alternative Refrigerants R123a, R134, R141b, R142b, and R152a: Critical Temperature, Refractive Index, Surface Tension, and Estimates of Liquid, Vapor, and Critical Densities.

Final rept. H. B. Chae, J. W. Schmidt, and M. R. Moldover.

1990, 6p

Sponsored by Department of Energy, Washington, DC. Pub. in Jnl. of Physical Chemistry 94, n25 p8840-8845, 13 Dec 90.

Not available NTIS PB91-149344 National Bureau of Standards (IMSE), Gaithersburg, MD. Ceramics Div.

Tensile-Fracture Resistance Mechanisms in Brittle Polycrystals: An Ultrasonics and In-situ Microscopy Investigation. Final rept.

P. L. Swanson. 1987, 22p Contract USGS-414274

Sponsored by Geological Survey, Menlo Park, CA. Pub. in Jnl. of Geophysical Research-Solid Earth and Planets 92, nNB8 p8015-8036 1987.

PB91-159137 Not available NTIS National Bureau of Standards (IMSE), Gaithersburg,

International Co-operation: The Versailles Project on Advanced Materials and Standards. Final rept.

L. H. Schwartz, and B. W. Steiner. 1988, 2p Pub. in ATAS Bulletin 5, p135-136 May 88.

PB91-159145 Not available NTIS National Bureau of Standards (IMSE), Gaithersburg, MD.

VAMAS Bulletin.

Final rept.

L. H. Schwartz, and B. W. Steiner. Jul 87, 16p Pub. as VAMAS Bulletin, n6 p1-16 Jul 87.

PB91-162024 Not available NTIS National Inst. of Standards and Technology (MSEL), Gaithersburg, MD. Polymers Div.

Effect of Pyrophosphate Concentrations on Calcium Phosphate Growth on Well-Crystallized Octacalcium Phosphate and Hydroxyapatite Seed Crystals.

Final rept

N. Eidelman, W. E. Brown, and J. L. Meyer. 1991, 9p Sponsored by American Dental Association Health Foundation, Chicago, IL.

Pub. in Jnl. of Crystal Growth 108, p385-393 1991.

PB91-174243 Not available NTIS National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Building Environment Div. Experimentation, Analysis, and Correlation of Refrigerant-22 Flow Through Short Tube Restrictors. Final rept.

D. A. Aaron, and P. A. Domanski. 1990, 13p Sponsored by Department of Energy, Washington, DC. Pub. in ASHRAE (American Society of Heating, Refrigerating and Air-Conditioning Engineers) Transactions, v96 pt1 13p 1990.

PB91-175414 Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Thermophysics Div. Thermodynamic Properties of Two Alternative Refrigerants: 1,1-dichloro-2,2,2-trifiuoroethane (R123) and 1,1,1,2-tetrafluoroethane (R134a).

Final rept. G. Morrison, and D. K. Ward. 1991, 22p

Sponsored by Department of Energy, Washington, DC. Pub. in Fluid Phase Equilibria 62, p65-86 1991.

#### Miscellaneous Materials

PB91-189563 Not available NTIS National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Building Environment Div.

Study of Flow Boiling Heat Transfer with Refrigerant Mixtures.

Final rept.

D. S. Jung, M. O. McLinden, R. Radermacher, and D. A. Didion. 1989, 14p

Sponsored by Electric Power Research Inst., Palo Alto, CA.

Pub. in International Jnl. of Heat Mass Transfer. 32, n9 p1751-1764 1989.

PB91-236695 Not available NTIS National Bureau of Standards (NEL), Gaithersburg, MD. Thermophysics Div.

Thermodynamic Diagrams for Refrigerant Mixtures.

Final rept.

J. S. Gallagher, M. O. McLinden, and G. Morrison. 1988, 18p

Sponsored by Electric Power Research Inst., Palo Alto, CA.

Pub. in ASHRAE (American Society of Heating, Refrigerating and Air-Conditioning Engineers) Transactions, v94 pt2 p2119-2136 1988.

PC A05/MF A01 PB92-112366 National Inst. of Standards and Technology (CSTL), Boulder, CO. Thermophysics Div.

Survey of Current Worldwide Research on the Thermophysical Properties of Alternative Refrigerants.

M. O. McLinden, W. M. Haynes, J. T. R. Watson, and K. Watanabe. Jun 91, 82p NISTIR-3969

Prepared in cooperation with National Engineering Lab., East Kilbride (Scotland), and Keio Univ., Yokohama (Japan). Dept. of Mechanical Engineering. Sponsored by Department of Energy, Washington, DC. Office of Buildings and Community Systems.

PB92-116748 Not available NTIS National Inst. of Standards and Technology (NML), Boulder, CO. Thermophysics Div.

Predictive Extended Corresponding States Model for Pure and Mixed Refrigerants.

Final rept.

J. F. Ely, and M. L. Huber. 1990, 10p Pub. in Proceedings of ASHRAE-Purdue CFC and IIR-Purdue Refrigeration Conference, West Lafayette, IN., July 17-20, 1990, 10p.

PB92-116946 Not available NTIS National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Building Equipment Div.

Horizontal Flow Boiling Heat Transfer Experiments with a Mixture of R22/R114.

Final rept.

D. Jung, M. O. McLinden, R. Radermacher, and D. A. Didion. 1989, 15p

Sponsored by Electric Power Research Inst., Palo Alto, CA.

Pub. in International Jnl. of Heat and Mass Transfer 32, n1 p131-145 1989.

### Nonferrous Metals & Alloys

PC A10/MF A02 AD-A229 229/0 National Inst. of Standards and Technology, Boulder, CO.

Aluminum Alloys for Cryogenic Tanks: Oxygen Compatibility. Volume 1.

Interim rept. Nov 88-Jun 90.

R. P. Reed, N. J. Simon, J. D. McColskey, and J. R. Berger. Sep 90, 207p AL-TR-90-063-VOL-1,

AD-A229 231/6 PC A09/MF A02 National Inst. of Standards and Technology, Boulder,

Review of Cryogenic Mechanical and Thermal Properties of Al-Li Alloys and Alloy 2219. Final rpt. Nov 88-Jun 90.

J. Simon, E. S. Drexler, and R. P. Reed. Sep 90, 197p AL-TR-90-064,

PC A07/MF A01 AD-A231 830/1 National Inst. of Standards and Technology, Boulder, CO.

Aluminum Alloys for ALS Cryogenic Tanks:

Oxygen Compatibility. Volume 2.
Final rept. Nov 88-Jun 90.
R. P. Reed, N. J. Simon, J. D. McColskey, C. N. McCowan, and E. S. Drexler. Sep 90, 128p AL-TR-90-0630-VOL-2,

See also Volume 1, AD-A229 229.

AD-A242 956/1 PC A07/MF A02 National Inst. of Standards and Technology, Boulder,

Aluminum Alloys for ALS Cryogenic Tanks: Comparative Measurements of Cryogenic Mechanical Properties of Al-Li Alloys and Alloy 2219.

Final rept. Aug 89-Mar 90. R. P. Reed, P. T. Purtscher, N. J. Simon, J. D. McColskey, and R. P. Walsh. Oct 91, 146p

DE91016274 PC A03/MF A01 National Inst. of Standards and Technology, Boulder,

Guideline for Nb(sub 3)Sn critical current measurements using fiberglass-epoxy composite sample mandrels.

L. F. Goodrich, 1989, 18p. CONF-890701-31 Contract Al01-86ER52132

International cryogenic materials conference, Los Angeles, CA (United States), 24-28 Jul 1989. Sponsored by Department of Energy, Washington, DC.

N91-21347/0

(Order as N91-21331/4, PC A24/MF A03) National Inst. of Standards and Technology (NML), Gaithersburg, MD. Thermophysics Div. Dynamic Technique for Measuring Surface Tension at High Temperatures in Microgravity Envi-

A. P. Miiller, and A. Cezairliyan. 1 May 90, 5p In JPL, Proceedings of the First Workshop on Containerless Experimentation in Microgravity p 243-247.

PC A07/MF A01 PB91-132225 National Inst. of Standards and Technology (MSEL), Gaithersburg, MD. Metallurgy Div. Institute for Materials Science and Engineering: Metallurgy Division, Technical Activities 1990.

Annual rept. 1 Oct 89-30 Sep 90. E. N. Pugh, and J. H. Smith. Dec 90, 142p NISTIR-

See also report for 1989, PB90-161159.

Not available NTIS PB91-134551 National Bureau of Standards (IMSE), Gaithersburg, MD. Metallurgy Div.
Literature Review of the Galling Process.

Final rept.

M. B. Peterson, L. K. Ives, and K. J. Bhansali. 1987,

Pub. in Proceedings of Symposium on Metal Transfer and Galling in Metallic Systems, Orlando, FL., October 8-9, 1986, p1-25 1987.

PB91-147314

Not available NTIS National Inst. of Standards and Technology (MSEL),

Gaithersburg, MD. Metallurgy Div. Phase Formation in Electrodeposited and Thermally Annealed Al-Mn Alloys.

Final rept.

B. Grushko, and G. R. Stafford. 1990, 11p

Sponsored by Office of Naval Research, Arlington, VA. Pub. in Metallurgical Transactions A 21A, p2869-2879 Nov 90.

PB91-147322 Not available NTIS National Bureau of Standards (IMSE), Gaithersburg, MD. Metallurgy Div.

Effect of Coherency Strain on Alloy Formation: Migration of Liquid Films.

Final rept.

C. A. Handwerker, J. W. Cahn, D. N. Yoon, and J. E. Blendell. 1985, 18p

Sponsored by Army Research Office, Research Trian-

gle Park, NC.
Pub. in Proceedings of TMS-AIME Fall Meeting Diffusion in Solids: Recent Developments, Detroit, MI., September 17, 1984, p275-292 1985.

PB91-147512 Not available NTIS National Bureau of Standards (IMSE), Gaithersburg,

Phase Diagrams of Hexagonal Binary Ordering Alloys with Anisotropic Interactions.

Final rept.

R. Kikuchi, and J. W. Cahn. 1987, 6p

Pub. in Proceedings of International Conference on User Applications of Alloy Phase Diagrams, Lake Buena Vista, FL., October 4-9, 1986, p19-24 1987.

PB91-147637 Not available NTIS National Bureau of Standards (IMSE), Gaithersburg, MD Ceramics Div.

Structure of Surface Films on Magnesium and on Magnesium Alloys.

Final rept.

G. G. Long, J. Kruger, D. K. Tanaka, and Z. Zhang. 1988, 1p

Pub. in Jnl. of the Electrochemical Society 135, n3 pC144 1988.

Not available NTIS PB91-148866 National Bureau of Standards (IMSE), Gaithersburg, MD. Reactor Radiation Div.

Neutron Powder Diffraction and Inelastic Scattering Study of the Structures of Zr2Pd, Zr2PdD1.70, and Zr2PdD1.96.

Final rept.

A. J. Maeland, E. Lukacevic, J. J. Rush, and A. Santoro. 1987, 15p

Pub. in Jnl. of the Less Common Metals 129, p77-91 Feb 87.

Not available NTIS PB91-149039 National Bureau of Standards (IMSE), Gaithersburg, MD. Metallurgy Div.

Materials Research at the National Bureau of Standards.

Final rept.

E. N. Pugh. 1986, 3p

Pub. in Proceedings of Materials Technology Congress, Adelaide, Australia, May 19-21, 1986, v1 p1-3.

PB91-149427 Not available NTIS National Inst. of Standards and Technology (IMSE), Gaithersburg, MD. Polymers Div.

### Nonferrous Metals & Alloys

Structural Instabilities and Superconductivity in Quasi-Binary Mn5Si3-Type Compounds. Final rept.

R. M. Waterstrat, R. Kuentzler, and J. Muller, 1990. 10p

Sponsored by American Dental Association Health Foundation, Chicago, IL.
Pub. in Jnl. of the Less-Common Metals 167, p169-

178 1990.

PB91-149450 Not available NTIS National Bureau of Standards (NEL), Gaithersburg, MD. Automated Production Technology Div. Material Dependency of Chip-Form Detection Using Acoustic Emission.

Final rept. K. W. Yee. 1987, 5p

Pub. in Proceedings of NAMRC (North American Manufacturing Research) Conference (15th), Bethlehem, PA., May 27-29, 1987, p458-462.

PB91-158485 Not available NTIS National Inst. of Standards and Technology (MSEL), Gaithersburg, MD. Reactor Radiation Div. Rapid Low-Temperature Hopping of Hydrogen in a

Pure Metal: The ScHx System. Final rept.

I. S. Anderson, N. F. Berk, J. J. Rush, T. J. Udovic, R. G. Barnes, A. Magerl, and D. Richter. 1990, 4p Pub. in Physical Review Letters 65, n12 p1439-1442, 17 Sep 90.

PB91-158527 Not available NTIS National Bureau of Standards (IMSE), Gaithersburg, MD. Metallurgy Div.

Acoustic Emission Monitoring of Laser Drilling. Final rept.

R. B. Clough, R. J. Schaefer, and H. N. G. Wadley. 1984, 10p

Pub. in Proceedings of ASM Metals Congress Metals/ Materials Technology Series, Detroit, MI., September 15-10, 1984, p1-10.

PB91-158550 Not available NTIS

National Inst. of Standards and Technology (MSEL), Gaithersburg, MD. Metallurgy Div.

Convective and Morphological Instabilities during Directional Solidification.

Final rept. S. R. Coriell, and G. B. McFadden. 1990, 15p Sponsored by National Aeronautics and Space Administration, Washington, DC.

Pub. in Principles of Solidification and Materials Processing, Chapter 16, v1 p365-379 1990.

PB91-158949 Not available NTIS Mational Bureau of Standards (IMSE), Gaithersburg, MD. Metallurgy Div.

Rapid Solidification Alloys: Crystals, Quasicrys-

tals, and Metallic Glass.

Final rept.

J. R. Manning. 1986, 6p Pub. in ASTM (American Society for Testing and Materials) Standardization News 14, n9 p26-31 Oct 86.

PB91-158964 Not available NTIS National Bureau of Standards (IMSE), Gaithersburg,

MD. Metallurgy Div.

Transformation of the Icosahedral Phase in Rapidly Quenched Al-rich Al-Mn Alloys. Final rept.

A. J. McAlister, L. A. Bendersky, R. J. Schaefer, and F. S. Biancaniello, 1987, 4p Pub. in Scripta Metallurgica 21, n2 p103-106 1987.

Not available NTIS PR91-159111 National Bureau of Standards (IMSE), Boulder, CO. Fracture and Deformation Div.

Use of Neutron Pole Figures to Calibrate Ultrasonic Techniques for On-Line Texture Control of Aluminum Plates. Final rept.

R. C. Reno, A. V. Clark, G. V. Blessing, R. J. Fields, A. Govada, R. B. Thompson, P. P. Del Santo, R. B. Mignogna, and J. F. Smith. 1987, 7p

Pub. in Proceedings of ASM Symposium on Intelligent Processing of Materials and Advanced Sensors, Orlando, FL., 1986, p77-83 1987.

PB91-159202 Not available NTIS National Bureau of Standards (IMSE), Gaithersburg, MD. Metallurgy Div.

Electrodeposition of Aluminum from Molten Salts. Final rept.

G. Stafford, and C. Turner. 1987, 13p Pub. in AESF Annual Technical Conference, v74 13p 1987.

PB91-167338 PC A04/MF A01 National Inst. of Standards and Technology, Gaithers-

Intercomparison Study of Rockwell Hardness Test Blocks.

T. R. Shives, and J. H. Smith. Feb 91, 74p NISTIR-

PB91-174466 Not available NTIS National Bureau of Standards (IMSE), Gaithersburg, MD. Reactor Radiation Div.

Properties of Amorphous Zirconium Rhodium Hydride (Zr3RhHx) Prepared from Glassy and Crystalline Alloys.

Final rept. R. C. Bowman, J. S. Cantrell, K. Samwer, J. Tebbe, E. L. Venturini, and J. J. Rush. 1988, 13p Pub. in Physics Review B: Condensed Matter 37, n15 p8575-8587 1988.

PB91-174771 Not available NTIS National Bureau of Standards (IMSE), Gaithersburg,

N-Dimensional Crystallographic Description of the Icosahedral Phases; the Example of the Al73Mn21Si6 Quasiperiodic Structure.

Final rept D. Gratias, J. W. Cahn, M. Bessiere, Y. Calvayrac, S. Lefebvre, A. Quivy, and B. Mozer. 1987, 12p Pub. in Proceedings of NATO Advanced Research Workshop, Italy, October 4-8, 1987, 12p.

PB91-187161 Not available NTIS National Inst. of Standards and Technology (MSEL), Gaithersburg, MD. Metallurgy Div. Role of Elastic Energy in the Morphological Development of a Ni-Ti-Al Alloy.

Final rept. L. A. Bendersky, P. W. Voorhees, W. J. Boettinger, and W. C. Johnson, 1988, 6p

Pub. in Scripta Metallurgica 22, n7 p1029-1034 Jul 88.

Not available NTIS National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Building Materials Div. Characterization of Cylindrical Holes in Metallic Substrates via Their Infrared Emission Patterns.

D. P. Bentz, J. W. Martin, and M. E. Batts. 1991, 12p Pub. in Wear 143, p255-266 1991.

PR91-187203 Not available NTIS National Inst. of Standards and Technology (MSEL), Gaithersburg, MD. Metallurgy Div.

Particle Size Measurement of Inert Gas Atomized Powder.

Final rept.

F. S. Biancaniello, J. J. Conway, P. I. Espina, G. E. Mattingly, and S. D. Ridder. 1990, 6p Pub. in Materials Science and Engineering A A124, n1 p9-14, 10 Apr 90.

PB91-187252 Not available NTIS National Inst. of Standards and Technology (IMSE), Gaithersburg, MD. Reactor Radiation Div. Relationship of Hydrogen Site Occupancy to Diffusion Behavior in Crystalline and Amorphous 7r2PdHx.

Final rept.

R. C. Bowman, D. R. Torgeson, R. G. Barnes, A. J. Maeland, and J. J. Rush. 1989, 6p Pub. in Z. Phys. Chem. 163, n2 p425-430 1989.

Not available NTIS PB91-189423 National Inst. of Standards and Technology (IMSE), Gaithersburg, MD. Metallurgy Div.
Structural Study of Electrodeposited Aluminum-Manganese Alloys.

Final rept.

B. Grushko, and G. Stafford, 1989, 9p. Pub. in Metallurgical Transactions A 20, n8 p1351-1359 1989.

PB91-189696 Not available NTIS National Inst. of Standards and Technology (IMSE), Gaithersburg, MD. Metallurgy Div.

Surface Properties and Coatings of Materials Microtailored Alloys.

Final rept.

D. Lashmore. 1988, 7p Pub. in Israel Jnl. of Technology 24, n3-4 p469-475 1988

Not available NTIS National Inst. of Standards and Technology (MSEL), Boulder, CO. Fracture and Deformation Div. Creep of Copper: 4 to 295 K.

Final rept.

R. P. Reed, N. J. Simon, and R. P. Walsh. 1990, 9p Sponsored by Department of Energy, Washington, DC Pub. in Advances in Cryogenic Engineering, v36 p1175-1183 1990.

PB91-194852 Not available NTIS National Inst. of Standards and Technology (MSEL), Boulder, CO. Fracture and Deformation Div. Elastic Constants of a Tungsten-Particle Copper-

Matrix Composite. Final rept.

H. Ledbetter, and S. Datta. 1991, 4p Pub. in JSME International Jnl., Series I, v34 n2 p194-197 1991.

Not available NTIS PB91-195537 National Bureau of Standards (IMSE), Gaithersburg, MD. Metallurgy Div.
Coherency Strain Induced Instability of Solid-

Liquid Interfaces in the Mo-Ni System.

Final rept. W. H. Rhee, C. A. Handwerker, and D. N. Yoon.

1988, 7p
Pub. in Proceedings of MRS Symposium on Interfacial Structure, Properties and Design, v122 p205-211 1988

PB91-195651 Not available NTIS National Inst. of Standards and Technology (IMSE), Gaithersburg, MD. Metallurgy Div.

### Nonferrous Metals & Alloys

Phase Selection in Non-Equilibrium Processing. Final rept.

R. J. Schaefer. 1989, 14p

Pub. in Proceedings of Indo-US Workshops on Solidification Principles and Materials Processing, Hyderabad, India, January 15-21, 1988, p381-394 1989.

PB91-202945 Not available NTIS National Inst. of Standards and Technology, Gaithers-

Ultrasonic Texture and Stress Measurements in Anisotropic Polycrystalline Aggregates.

Final rept.

P. P. Delsanto, R. B. Mignogna, and A. V. Clark.

1990, 10p

Sponsored by Office of Naval Research, Arlington, VA. Pub. in Jnl. of the Acoustical Society of America 87, n1 p215-224 Jan 90.

PB91-204156 Not available NTIS National Inst. of Standards and Technology (IMSE), Gaithersburg, MD. Metallurgy Div.

Crystalline and Glassy Phases of Transition-Metal -Metalloid Systems.

Final rept.

R. E. Watson, and L. H. Bennett. 1991, 11p Sponsored by Department of Energy, Washington, DC Pub. in Physical Review B 43, n14 p11 642-11 652, 15 May 91.

PB91-236760 Not available NTIS National Bureau of Standards (IMSE), Gaithersburg, MD. Metallurgy Div.

Microstructural Control Through Diffusion-Induced Grain Boundary Migration.

Final rept.

C. A. Handwerker, and J. W. Cahn. 1988, 7p Pub. in Materials Research Society Symposium Proceedings, v106 p127-133 1988.

PB92-108992 PC A04/MF A01 National Inst. of Standards and Technology (CAML), Gaithersburg, MD.

Phase-Field Model for Isothermal Phase Transi-

tions in Binary Alloys.
A. A. Wheeler, W. J. Boettinger, and G. B. McFadden. Aug 91, 52p NISTIR-4662

PB92-116938 Not available NTIS National Inst. of Standards and Technology (MSEL), Gaithersburg, MD. Metallurgy Div. Microstructural Studies of Ti-Al Alloys in the Vicini-

ty of the 'Eutectoid' Reaction.

Final rept.
S. A. Jones, R. D. Shull, A. J. McAlister, and M. J. Kaufman, 1988, 6p

Pub. in Scripta Metallurgica 22, n8 p1235-1240 Aug 88

### **Plastics**

PB91-148247 Not available NTIS National Inst. of Standards and Technology (MSEL), Gaithersburg, MD. Polymers Div. Multistep Stress-Relaxation Behavior in Uniaxial

Extension of an Ethylene-Hexene Copolymer. Final rept.

J. Zapas, and J. M. Crissman, 1990, 13p Pub. in Jnl. of Rheology 34, n1 p1-13 Jan 90.

PB91-150086 Not available NTIS National Inst. of Standards and Technology (NML), Boulder, CO. Chemical Engineering Science Div.

Biodegradable Plastics: An Idea Whose Time Has Come.

Final rept.

J. D. Evans, and S. K. Sikdar. 1990, 5p Pub. in CHEMTECH 20, p38-42 Jan 90.

PB91-189712 Not available NTIS National Bureau of Standards (IMSE), Gaithersburg, MD. Polymers Div.

Effect of Crosslink Density on Physical Aging of

Epoxy Networks.

Final rept.

A. Lee, and G. B. McKenna, 1988, 6p Pub. in Polymer 29, n10 p1812-1817 Oct 88.

PB91-189720 Not available NTIS National Inst. of Standards and Technology (IMSE), Gaithersburg, MD. Polymers Div.

Viscoelastic Response of Epoxy Glasses Subject-

ed to Different Thermal Treatments. Final rept.

A. Lee, and G. B. McKenna. 1989, 4p Pub. in Proceedings of ANTEC 89 Annual Technical Conference of Society of Plastics Engineers (47th), New York, NY., May 1-4, 1989, p1170-1173.

Not available NTIS PB91-189829 National Bureau of Standards (IMSE), Gaithersburg, MD. Polymers Div. Physical Aging and the Viscoelastic Response of

Network Glasses. Final rept.

G. B. McKenna, and A. Lee. 1988, 4p Pub. in Proceedings of the International Conference on Deformation, Yield and Fracture of Polymers (7th), Cambridge, UK., April 11-14, 1988, p2/1-2/4.

PB91-236612 Not available NTIS National Inst. of Standards and Technology (MSEL), Gaithersburg, MD. Polymers Div. Long Time Creep and Lifetime Behavior in Uniaxial

Extension of a Linear Low Density Polyethylene.

Final rept. J. M. Crissman. 1991, 7p

Pub. in Polymer Engineering and Science 31, n8 p541-547 Apr 91.

### Wood & Paper Products

DE91007688 PC A05/MF A01 National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Center for Chemical Engineering. Advanced sensor development program for the pulp and paper industry. Final report.

Progress rept.
J. D. Allen, S. R. Charagundla, A. Macek, H. G. Semerjian, and J. R. Whetstone. Oct 90, 100p DOE/

CE/40748-T1 Contract Al01-85CE40748

Sponsored by Department of Energy, Washington, DC.

General

PB91-147546 Not available NTIS National Bureau of Standards (NML), Gaithersburg, MD. Office of Standard Reference Data. Factual Materials Databanks - The Need for Standards.

Final rept. H. Krockel, K. Reynard, and J. Rumble. 1987, 60p Pub. in VAMAS (Versailles Project on Advanced Materials and Standards) Report, pi-51 Jul 87. PB91-148049 Not available NTIS National Inst. of Standards and Technology (NML), Boulder, CO. Chemical Engineering Science Div.

Apparatus for Measurement of Coefficient of Fric-

tion. A. J. Slifka, J. D. Siegwarth, L. L. Sparks, and D. K. Chaudhuri, 1990, 7p

Sponsored by National Aeronautics and Space Administration, Huntsville, AL. George C. Marshall Space Flight Center.

Pub. in Advances in Cryogenic Engineering (Materials) 36, p1119-1125 1990.

PB91-204040 Not available NTIS National Inst. of Standards and Technology (IMSE), Gaithersburg, MD.

International Collaboration in Prestandards Research on Advanced Materials within the Context of VAMAS.

Final rept.

L. H. Schwartz, and B. W. Steiner. 1989, 6p Pub. in ASTM (American Society for Testing and Materials) Standardization News 17, n2 p28-33 Feb 89.

PB92-126424 PC A05/MF A01 National Inst. of Standards and Technology (MSEL),

Gaithersburg, MD.
Materials Reliability. Technical Activities, 1991.
(NAS-NRC Assessment Panel, February 13-14, 1992).

H. I. McHenry. 1992, 95p NISTIR-4695 See also PB91-143339.

PB92-126606 PC A15/MF A03 National Inst. of Standards and Technology (MSEL),

Gaithersburg, MD.
National Educators Workshop: Update '90. Standard Experiments in Engineering Materials Science and Technology.

Final rept.

J. S. Harris, and J. A. Jacobs. Nov 91, 341p NIST/ SP-822

Also available from Supt. of Docs as SN003-003-03124-1. See also N90-24350 and N91-20207. Proceedings of a Workshop held in Gaithersburg, MD., November 13-15, 1990. Prepared in cooperation with Norfolk State Univ., VA., and National Aeronautics and Space Administration, Washington, DC. Sponsored by ASM International, Detroit, MI., and Battelle Pacific Northwest Labs., Richland, WA.

### MATHEMATICAL SCIENCES

### Algebra, Analysis, Geometry, & Mathematical Logic

Not available NTIS PB91-147850 National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Scientific Computing Div.
Computing the Eigenvalues and Eigenvectors of Symmetric Arrowhead Matrices. Final rept.

D. P. O'Leary, and G. W. Stewart. 1990, 9p Pub. in Jnl. of Computational Physics 90, n2 p497-505 Oct 90

PB91-148742 Not available NTIS National Inst. of Standards and Technology (NML), Boulder, CO. Quantum Physics Div.

### Algebra, Analysis, Geometry, & Mathematical Logic

Asymptotic Shooting Method for the Solution of Differential Equations. Final rept.

A. Holubec, A. D. Stauffer, P. Acacia, and J. A.

Stauffer. 1990, 15p Pub. in Jnl. of Physics A: Mathematical and General 23, p4081-4095 1990.

PB91-148759 Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Ionizing Radiation Div.

Certain Theorems on Bilateral Generating Functions Involving Hermite, Laguerre, and Gegenbauer Polynomials. Final rept.

J. H. Hubbell, and H. M. Srivastava. 1990, 11p Pub. in Jnl. of Mathematical Analysis and Applications 152, p343-353 1990.

PB91-159046 Not available NTIS National Bureau of Standards (NEL), Gaithersburg, MD. Mathematical Analysis Div.

Simplified Error Bounds for Newton's Rule. Final rept

F. W. J. Olver. 1986, 7p Pub. in IMA Jnl. of Numerical Analysis 6, n3 p373-379 1986

PB91-175281 Not available NTIS National Bureau of Standards (NEL), Gaithersburg, MD. Mathematical Analysis Div.

Some Algorithms for Approximating Convolutions. Final rept.

D. P. O'Leary, 1988, 13p

Pub. in Computer Vision, Graphics, and Image Processing 41, n3 p333-345 Mar 88.

PB91-187245 Not available NTIS National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Applied and Computational Mathe-

Algorithms for Special Tridiagonal Systems.

Final rept.

R. F. Boisvert. 1991, 20p

Pub. in SIAM (Society for Industrial and Applied Mathematics) Jnl. on Scientific and Statistical Computing 12, n2 p423-442 Mar 91.

PB91-187799 PC A03/MF A01 National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Applied and Computational Mathé matics Div.

Convergence Properties of a Class of Rank-Two Updates.

P. T. Boggs, and J. W. Tolle. Apr 91, 49p NISTIR-4554

Contracts AFOSR-ISSA-90-0004, AFOSR-88-0267 Prepared in cooperation with North Carolina Univ. at Chapel Hill. Sponsored by Air Force Office of Scientific Research, Bolling AFB, DC.

Not available NTIS PB91-203497 National Inst. of Standards and Technology (NML), Gaithersburg, MD.

Nature of Collinearity. Final rept.

J. Mandel. 1989, 9p

Pub. in Jnl. of Quality Technology 21, n4 p268-276 1989

PB91-216754

(Order as PB91-216705, PC A07/MF A01) National Inst. of Standards and Technology, Gaithersburg, MD.

Root Projection of One-Sided Time Series.

J. A. Simmons. 1991, 11p Included in Jnl. of Research of the National Institute of Standards and Technology, v96 n3 p333-343 May/Jun PB91-216762

(Order as PB91-216705, PC A07/MF A01) National Inst. of Standards and Technology, Gaithersburg, MD.

Deconvolution of Acoustic Emission and Other Causal Time Series.

J. A. Simmons, 1991, 25p

Included in Jnl. of Research of the National Institute of Standards and Technology, v96 n3 p345-369 May/Jun

PB92-112408 PC A09/MF A02 National Inst. of Standards and Technology (CAML),

Gaithersburg, MD.
NBS-INA. The Institute for Numerical Analysis.
UCLA 1947-1954.

Special pub. (Final).

M. R. Hestenes, and J. Todd. Aug 91, 185p NIST/ SP-730

Also available from Supt. of Docs. as SN003-003-03094-5. Prepared in cooperation with California Univ., Los Angeles. Dept. of Mathematics, and California Inst. of Tech., Pasadena. Dept. of Mathematics. Sponsored by Mathematical Association of America, Washington, DC.

PB92-123108 PC A03/MF A01 National Inst. of Standards and Technology (CAML), Gaithersburg, MD. Applied and Computational Mathe-

Computing Delaunay Triangulations for Comet-Shaped Polygons.
J. Bernal. Nov 91, 19p NISTIR-4716

See also PB89-129480.

Interior-Point Method for Linear and Quadratic Programming Problems.
P. T. Boggs, P. D. Domich, J. E. Rogers, and C.

Witzgall. Apr 91, 13p NISTIR-4556

PR91-204198 Not available NTIS National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Applied and Computational Mathematics Div.

Convergence Behavior of Trajectories for Linear Programming. Final rept.

C. Witzgall, P. T. Boggs, and P. D. Domich. 1990,

Contract ONR-N-0014-87-F0053

Sponsored by Office of Naval Research, Arlington, VA. Pub. in Contemporary Mathematics 114, p161-187 1990.

PC A03/MF A01 PB92-116318 National Inst. of Standards and Technology (CAML), Gaithersburg, MD.

Merit Function for Inequality Constrained Nonlinear Programming Problems.
P. T. Boggs, J. W. Tolle, and A. J. Kearsley. Oct 91, 34p NISTIR-4702

See also PB90-123944 and PB86-105830. Prepared in cooperation with North Carolina Univ. at Chapel Hill. Dept. of Mathematics, and Rice Univ., Houston, TX. Dept. of Mathematical Sciences.

### Operations Research

Not available NTIS National Bureau of Standards (NEL), Gaithersburg, MD. Center for Applied Mathematics.

Second Order Sensitivity Analysis in Factorable

Programming: Theory and Applications. Final rept.

R. H. F. Jackson, and G. P. McCormick. 1988, 273p Pub. in Mathematical Programming 41, n1 p1-273 May

PB91-174540 Not available NTIS National Bureau of Standards (NEL), Gaithersburg, MD. Mathematical Analysis Div.

Applications of Operations Research Techniques

to System Design and Evaluation. Final rept.

R. E. Chapman. 1986, 2p Pub. in Proceedings of Symposium on ASME (American Society of Mechanical Engineers) Codes and Recent Advances in PVP and Valve Technology, Chicago, IL., July 20-24, 1986, p139-140.

PB91-174896 Not available NTIS National Bureau of Standards (NEL), Gaithersburg, MD. Operations Research Div.

State-of-the-Art of Computational Testing of Mathematical Programming Algorithms. Final rept.

Pub. in Mathematical Programming Society Committee on Algorithms Newsletter, n12 p8-13 May 85.

PC A03/MF A01 National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Applied and Computational Mathematics Div.

### Statistical Analysis

PB91-147017 Not available NTIS National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Applied and Computational Mathematics Div.

Orthogonal Distance Regression.

Final rept.

P. T. Boggs, and J. R. Donaldson. 1989, 12p See also PB90-151747.

Pub. in Proceedings of Summer Research Conference on Contemporary Mathematics, Arcata, CA., June 10-16, 1989, v112 p183-194 1990.

PB91-149443 Not available NTIS National Bureau of Standards (NEL), Boulder, CO. Statistical Engineering Div.

Linear Calibration When the Coefficient of Variation Is Constant. Final rept.

Y. C. Yao, and D. F. Vecchia. 1988, 13p

Pub. in Probability and Statistics, p297-309 1988.

PB91-158824 Not available NTIS National Bureau of Standards (NEL), Gaithersburg, MD. Statistical Engineering Div. Design and Analysis of Experiments. Final rept. J. S. Hunter, M. G. Natrella, E. H. Barnett, W. G.

Hunter, and T. L. Koehler. 1988, 81p Pub. in Juran's Quality Control Handbook, Section 26, p26.1-26.81 1988.

Not available NTIS PB91-158907 National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Statistical Engineering Div. New Yorker in Japan.

Final rept. W. Liggett. 1990, 2p Pub. in Industrial Science and Technology 31, p46-47

#### MATHEMATICAL SCIENCES

### Statistical Analysis

PB91-158931

Not available NTIS

Not available NTIS

National Bureau of Standards (NEL), Gaithersburg, MD. Statistical Engineering Div.

Calibration with Working Standards. Final rept.

T. Lwin, and C. H. Spiegelman. 1986, 6p Contract ONR-00014-83-005

Sponsored by Office of Naval Research, Arlington, VA. Pub. in Applied Statistics 35, n3 p256-261 1986.

PB91-203414

National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Statistical Engineering Div.

Estimators for Censored (Log)Normal Samples. Final rept.

J. A. Lechner, 1989, 7p

Pub. in Proceedings of Annual Reliability and Maintainability Symposium, Atlanta, GA., January 24-26, 1989, p262-268.

PB91-507954

**CP T06** 

National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Statistical Engineering Div. OMNITAB 80 (ASCII): An Interactive System for Statistical and Numerical Data Analysis (Version 7.0).

Software

Mar 91, mag tape NIST/SW/MT-91/011 System: SUN/UNIX; VMS V4.7 operating system. Language: TAR UNIX command FO. Other formats available as PB91-507962 (UNIX).

Available in 9-track, ASCII character set, 1600 or 6250 bpi. For 6250 bpi, the price is T06. Documentation included; may be ordered separately as PB87-172235.

PB91-507962

**CP T06** 

National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Statistical Engineering Div. OMNITAB 80 (UNIX): An Interactive System for

Statistical and Numerical Data Analysis. Version 7.0.

Software.

May 91, mag tape NIST/SW/MT-91/012

System: SUN/UNIX; VMS V4.7 operating system. Language: TAR UNIX command FO. Other formats available as PB91-507954 (ASCII).

Available in 9-track, ASCII character set, 1600 or 6250 bpi. For 6250 bpi, the price is T06. Documentation included; may be ordered separately as PB87-172235.

PB92-126671

(Order as PB92-126614, PC A06/MF A02) National Inst. of Standards and Technology, Gaithersburg, MD.

Taguchi's Orthogonal Arrays Are Classical Designs of Experiments.

R. N. Kacker, E. S. Lagergren, and J. J. Filliben. 1991, 15p

Included in Jnl. of Research of the National Institute of Standards and Technology, v96 n5 p577-591 Sep/Oct

PB92-126705

(Order as PB92-126614, PC A06/MF A02) Birsa Agricultural Univ., Ranchi (India). Dept. of Statis-

List of New Group Divisible Designs.

K. Sinha. 1991, 3p

Included in Jnl. of Research of the National Institute of Standards and Technology, v96 n5 p613-615 Sep/Oct 91.

### General

PB91-132175 PC A03/MF A01 National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Applied and Computational Mathematics Div.

Guide to Available Mathematical Software Problem Classification System.
R. F. Boisvert, S. E. Howe, and D. K. Kahaner. Nov

90, 33p NISTIR-4475 See also PB90-216508

### MEDICINE & BIOLOGY

**Biochemistry** 

PB91-134544 Not available NTIS National Inst. of Standards and Technology (NML), Boulder, CO. Chemical Engineering Science Div. Chitin-Chitosan Membranes: Separations of Amino Acids and Polypeptides.

J. J. Pellegrino, S. Geer, K. Maegley, R. Rivera, and D. Steward. 1990, 16p Pub. in Annals of the New York Academy of Sciences 589, p229-244, 20 May 90.

PR91-174565 Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Organic Analytical Research Div. Planar Waveguide Optical Immunosensors. Final rept.

S. J. Choquette, L. Locascio-Brown, and R. A. Durst.

1990, 6p Pub. in Proceedings of SPIE (Society of Photo-Optical Instrumentation Engineers) Chemical, Biochemical, and Environmental Fiber Sensors II, San Jose, CA., September 19-21, 1990, v1368 p258-263.

Not available NTIS National Bureau of Standards (NML), Gaithersburg, MD. Chemical Thermodynamics Div. Neutron Crystallography of Proteins.

Final rept. N. V. Raghavan, and A. Wlodawer. 1987, 31p Pub. in Methods of Experimental Physics, v23 ptC n335-365 1987

PR91-189472 Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Ionizing Radiation Div. 8-Hydroxyguanine Content of Isolated Mitochondria Increases with Lipid Peroxidation. Final rept.

A. M. Hruszkewycz, and D. S. Bergtold. 1990, 6p. Pub. in Mutation Research 244, n2 p123-128 1990.

PB91-189886 Not available NTIS National Inst. of Standards and Technology (NML), Boulder, CO. Chemical Engineering Science Div. Enhanced Transport and Liquid Membranes in Bioseparations. Final rept.

J. Pellegrino, and R. Noble. 1990, 9p Pub. in Trends in Biotechnology 8, p216-224 Aug 90.

PB91-194803 Not available NTIS National Inst. of Standards and Technology (CSTL), Gaithersburg, MD. Biotechnology Div.

Thermodynamics of Hydrolysis of Oligosaccharides.

Final rept.

R. N. Goldberg, D. Bell, Y. B. Tewari, and M. A. McLaughlin. 1991, 8p

Pub. in Biophysical Chemistry 40, p69-76 1991.

PB91-195701 Not available NTIS National Inst. of Standards and Technology (CSTL), Gaithersburg, MD. Biotechnology Div.

Thermodynamics of Hydrolysis of Disaccharides: Lactulose, alpha-D - Melibiose, Palatinose, D - Tre-halose, D - Turanose and 3-o-beta-D-Galactopyranosyl-D-arabinose.

Final rept.

Y. B. Tewari, and R. N. Goldberg. 1991, 9p. See also PB89-186761.

Pub. in Biophysical Chemistry 40, p59-67 1991.

PB92-116953 Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Ionizing Radiation Div.
Formation of ortho-Tyrosine by Radiation and Organic Solvents in Chicken Tissue. Final rept.

L. R. Karam, and M. G. Simic. 1990, 5p Pub. in Jnl. of Biological Chemistry 265, n20 p11581-11585, 15 Jul 90.

Clinical Chemistry

PB91-147629 Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Organic Analytical Research Div. Liposome Flow Injection Immunoassay: Implications for Sensitivity, Dynamic Range, and Antibody Regeneration. Final rent.

L. Locascio-Brown, A. L. Plant, V. Horvath, and R. A. Durst. 1990, 7p

Pub. in Analytical Chemistry 62, n23 p2587-2593, 1 Dec 90.

PB91-189266 Not available NTIS National Bureau of Standards (NML), Gaithersburg, MD. Organic Analytical Research Div. Stability of Uric Acid in Ammonium Hydroxide.

Final rept. P. Ellerbe, A. Cohen, M. J. Welch, and E. White V. 1988, 3p Pub. in Clinical Chemistry 34, n11 p2280-2282 1988.

Clinical Medicine

PR91-195198 Not available NTIS Not available N15
National Inst. of Standards and Technology (NML),
Gaithersburg, MD. Ionizing Radiation Div.
Intensifying Effect of Metallic Screens on the Sensitivity of X-ray Films for 400-kV Bremsstrahlung

Photons.

Final rept.

E. Navon, C. E. Dick, and G. Barnea. 1991, 6p Pub. in Medical Physics 18, n2 p299-304 Mar/Apr 91.

PB91-203745 Not available NTIS National Bureau of Standards (IMSE), Gaithersburg, MD. Metallurgy Div.

### **MEDICINE & BIOLOGY**

### Clinical Medicine

Mossbauer Imaging. Final rept. S. J. Norton. 1988, 1p See also PB89-176895. Pub. in Physics Bulletin 39, n5 p182 1988.

PB92-116623 Not available NTIS National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Statistical Engineering Div. Use of Cross-Validation as a Stopping Rule in Emission Tomography Image Reconstruction. Final rept.

Final rept.
K. J. Coakley. 1991, 8p
Pub. in Proceedings of SPIE (Society of Photo-Optical Instrumentation Engineers) - Medical Imaging V: Image Physics, v1443 p226-233 1991.

PB92-117142 Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Ionizing Radiation Div.
Photon Energy Dependence of the Sensitivity of
Radiochromic Film and Comparison with Silver
Hallde Film and LiF TLDs Used for Brachytherapy

Dosimetry.

Final rept.
P. J. Muench, A. S. Meigooni, R. Nath, and W. L. McLaughlin. 1991, 7p
Sponsored by Public Health Service, Rockville, MD.

Pub. in Medical Physics 18, n4 p769-775 Jul/Aug 91.

### Cytology, Genetics, & Molecular Biology

Not available NTIS PB91-134767 National Inst. of Standards and Technology (NML), Boulder, CO. Chemical Engineering Science Div. Gravity-Dependent Phenomena at the Scale of the Single Cell. Final rept.

P. Todd. 1989, 19p

Pub. in American Society for Gravitational and Space Biology Bulletin 2, p95-113 Aug 89.

PB91-148098 Not available NTIS National Bureau of Standards (NML), Gaithersburg, MD. Chemical Thermodynamics Div.

Multiple Conformations of Amino Acid Residues in Ribonuclease A.

Final rept. L. A. Svensson, L. Sjolin, G. L. Gilliland, B. C. Finzel,

and A. Wlodawer. 1986, 6p Pub. in Proteins: Struct., Funct., Genet. 1, n4 p370-375

PB91-148213 Not available NTIS National Bureau of Standards (NML), Gaithersburg,

MD. Chemical Thermodynamics Div.
Crystallizing Catabolite Gene Activator Protein with cAMP for Structural Analysis.

Final rept. I. T. Weber. 1988, 8p

Pub. in Methods in Enzymology 159, p278-285 1988.

Not available NTIS PB91-149229 National Inst. of Standards and Technology (NML), Boulder, CO. Chemical Engineering Science Div. Hydrodynamics and Mass Transfer in Two-Phase Aqueous Extraction Using Spray Columns. Final rept.

S. B. Sawant, S. K. Sikdar, and J. B. Joshi. 1990, 7p Pub. in Biotechnology and Bioengineering 36, p109-115 1990.

PB91-175604 Not available NTIS National Bureau of Standards (NML), Gaithersburg, MD. Chemical Thermodynamics Div.

Crystal Structure of Phosphate-Free Ribonuclease.

Final rept. A. Wlodawer, G. I. Gilliland, L. Sjolin, and L. A.

Svensson. 1987, 10p
Pub. in UCLA (University of California, Los Angeles)
Symposium on Molecular and Cellular Biology 69, n2 p109-118 1987.

PB91-187476 Not available NTIS National Inst. of Standards and Technology (CSTL), Gaithersburg, MD. Biotechnology Div.

46Gas Chromatography-Mass Spectrometry of Free Radical-Induced Products of Pyrimidines and Purines in DNA.

M. Dizdaroglu. 1990, 16p

Pub. in Methods of Enzymology 193, p842-857 1990.

PB91-187484 Not available NTIS National Inst. of Standards and Technology (CSTL), Mailtona in Society of Charles of tein Cross-Links in Mammalian Chromatin.

M. Dizdaroglu. 1990, 14p Sponsored by Department of Energy, Washington, DC. Pub. in Ionizing Radiation Damage to DNA: Molecular Aspects, p17-30 1990.

PB91-189365 Not available NTIS National Inst. of Standards and Technology (CSTL), Gaithersburg, MD. Biotechnology Div. Hydroxyl Radical Induced Cross-Linking of Cytosine and Tyrosine in Nucleohistone. Final rept.

E. Gajewski, and M. Dizdaroglu. 1990, 4p Pub. in Biochemistry 29, n4 p977-980 1990.

PR91-190074 Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Chemical Thermodynamics Div. Crystal Structure of a cAMP-Independent Form of Catabolite Gene Activator Protein with Adenosine Substituted in One of 2 cAMP-Binding Sites. Final rept.

M. C. Vaney, G. L. Gilliland, J. G. Harman, A. Peterkofsky, and I. T. Weber. 1989, 7p Pub. in Biochemistry 28, n11 p4568-4574 1989.

PB91-200824 Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Chemical Kinetics Div. Iron Ion-Dependent Modification of Bases in DNA

by the Superoxide Radical-Generating System Hypoxanthine/Xanthine Oxidase. Final rept.

O. I. Aruoma, B. Halliwell, and M. Dizdaroglu. 1989,

Pub. in Jnl. of Biological Chemistry 264, n22 p13024-13028, 5 Aug 89.

PB91-202960 Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Chemical Kinetics Div. Selected-Ion Mass Spectrometry: Assays of Oxidative DNA Damage.

Final rept. M. Dizdaroglu, and E. Gajewski. 1990, 15p Pub. in Methods in Enzymology 186, p530-544 1990.

PB91-237198 Not available NTIS National Inst. of Standards and Technology (CSTL), Gaithersburg, MD. Biotechnology Div. Immobilization of Binding Proteins on Nonporous Supports Comparison of Protein Loading, Activity, and Stability.

Final rept.

A. L. Plant, L. Locascio-Brown, W. Haller, and R. A. Durst. 1991, 16p

Pub. in Applied Biochemistry and Biotechnology 30, p83-98 1991.

PB91-237362 Not available NTIS National Inst. of Standards and Technology (MSEL), Gaithersburg, MD. Reactor Radiation Div. Ab Initio Phase Determination for X-ray Diffraction Data from Crystals of a Native Protein.

Final rept. L. Sjolin, E. Prince, L. Anders Svensson, and G. L.

Gilliland, 1991, 8p Pub. in Acta Crystallographica A47, p216-223 1991.

PB91-237560 Not available NTIS National Bureau of Standards (NEL), Boulder, CO. Chemical Engineering Science Div.

Low-Cost Aqueous Two-Phase System Enzyme Extraction.

Final rept.

D. C. Szlag, and K. A. Giuliano. 1988, 6p Pub. in Biotechnol. Tech. 2, n4 p277-282 1988.

PB91-237602 Not available NTIS National Inst. of Standards and Technology (CSTL), Gaithersburg, MD. Biotechnology Div. Thermodynamics Industrially of Important

Enzyme Catalyzed Reactions. Final rept.

Y. B. Tewari, 1990, 17p Pub. in Appl. Biochem. Biotechnol. 23, n3 p187-203

PB92-116912 Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Chemical Thermodynamics Div. Damage to the Bases in DNA Induced by Stimulated Human Neutrophils.

Final rept. J. H. Jackson, P. A. Hyslop, I. U. Schraufstatter, C. G. Cochrane, M. Dizdaroglu, A. F. Fuciarelli, and E. Gajewski. 1989, 6p

Pub. in Jnl. of Clinical Investigation 84, n5 p1644-1649

PB92-117399 Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Chemical Thermodynamics Div. Thermodynamics of the Disproportionation of Adenosine 5'-diphosphate to Adenosine 5'-triphosphate and Adenosine 5'-monophosphate. 2. Experimental Data.

Final rept. Y. B. Tewari, R. N. Goldberg, and J. V. Advani. 1991,

See also PB92-116854.

Pub. in Biophysical Chemistry 40, p163-176 1991.

### **Dentistry**

PB91-187666

(Order as PB91-187617, PC A06/MF A01) National Inst. of Standards and Technology, Gaithersburg, MD.

### **MEDICINE & BIOLOGY**

### Dentistry

Digital Image Analysis Assisted Microradiography Measurement of Mineral Content of Caries Lesions In Teeth.

L. C. Chow, S. Takagi, W. Tung, and T. H. Jordan. 1991, 12p

Prepared in cooperation with American Dental Asso-

ciation Health Foundation, Chicago, IL. Included in Jnl. of Research of the National Institute of

Standards and Technology, v96 n2 p203-214 Mar/Apr

PB91-194746 Not available NTIS National Inst. of Standards and Technology (IMSE), Gaithersburg, MD. Polymers Div.

Effects of pH and Calcium on Hydrolysis of Na2SiF6 and Na2SnF6: A Quasi-Constant Compcsition Titration Study.

Final rept.

N. Eidelman, and L. C. Chow. 1991, 7p

Sponsored by American Dental Association Health Foundation, Chicago, IL.

Pub. in Caries Research 25, p101-107 1991.

PB92-126689

(Order as PB92-126614, PC A06/MF A02) National Inst. of Standards and Technology, Gaithersburg, MD.

Mathematical Model for Dental Caries: A Coupled **Dissolution-Diffusion Process.** 

T. M. Gregory, L. C. Chow, and C. M. Carey. 1991, 12<sub>D</sub>

Included in Jnl. of Research of the National Institute of Standards and Technology, v96 n5 p593-604 Sep/Oct

#### Nutrition

PB91-147413 Not available NTIS National Bureau of Standards (NML), Gaithersburg, MD. Inorganic Analytical Research Div. **Dietary Collection Procedures.** 

Final rept.

G. V. lyengar. 1987, 7p

Pub. in Clinical Nutrition 6, n4 p147-153 Jul/Aug 87.

PB91-147421 Not available NTIS National Bureau of Standards (NML), Gaithersburg, MD. Inorganic Analytical Research Div.

Practical Constraints in Monitoring Micronutrient Intake.

Final rept.

G. V. lyengar. 1987, 5p

Pub. in Clinical Nutrition 6, n4 p154-158 Jul/Aug 87.

### Pharmacology & Pharmacological Chemistry

Not available NTIS PR91-195149 National Inst. of Standards and Technology (IMSE), Gaithersburg, MD. Polymers Div.

Adsorption and Orientation of Tetracycline on Hydroxyapatite.

Final rept.

D. N. Misra. 1991, 6p

Sponsored by American Dental Association Health Foundation, Chicago, IL.
Pub. in Calcified Tissue International 48, p362-367

### Public Health & Industrial Medicine

Not available NTIS National Bureau of Standards (NML), Gaithersburg, MD. Gas and Particulate Science Div. Visibility of Chrysotile Asbestos in the Scanning Electron Microscope.

Final rept.

J. A. Small. 1985, 18p

Sponsored by Ontario Research Foundation, Mississauga.

Pub. in Proceedings of Workshop on Asbestos Fibre Measurements in Building Atmospheres, Toronto, Canada, March 1985, p69-86.

### Radiobiology

PB91-190108 Not available NTIS National Inst. of Standards and Technology (CSTL), Gaithersburg, MD. Biotechnology Div.

Mechanistic Studies of Ionizing Radiation and Oxidative Mutagenesis: Genetic Effects of a Single 8-Hydroxyguanine (7-Hydro-8-oxoguanine) Residue Inserted at a Unique Site in a Viral Genome. Final rept.

M. L. Wood, M. Dizdaroglu, E. Gajewski, and J. M. Essigmann. 1990, 9p

Pub. in Biochemistry 29, n30 p7024-7032 1990.

PB91-195057 Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Ionizing Radiation Div.

Absorbed Dose to Water: Comparison of Several Methods Using a Liquid Ionization Chamber. Final rept.

O. Mattsson, H. Svensson, G. Wickman, S. R. Domen, J. S. Pruitt, and R. Loevinger. 1990, 6p Sponsored by Sahlgren Hospital, Gothenburg (Sweden), and Umea Univ. (Sweden). Pub. in Acta Oncologica 29, n2 p235-240 1990.

PB91-203265 Not available NTIS National Inst. of Standards and Technology (NML), Ratitorial initial of Stationard and Technology (NML), Gaithersburg, MD. Ionizing Radiation Div. Interlaboratory Comparison of Actinides in Human Tissue (239)Pu + (240)Pu.

K. G. W. Inn, W. S. Liggett, H. L. Volchok, M. S. Feiner, J. F. McInroy, D. S. Popplewell, D. R. Percival, R. A. Wessman, V. T. Bowen, H. D. Kathan and H. Kawamura, 199 Livington, R. L. Kathren, and H. Kawamura. 1990,

Pub. in Jnl. of Radioanalytical and Nuclear Chemistry 138, n2 p219-229 1990.

Not available NTIS PB91-236497 National Inst. of Standards and Technology (PL), Gaithersburg, MD. Ionizing Radiation Div.
Use of Storage Phosphor Imaging Plates in Portal
Imaging and High-Energy Radiography: The Inten-

sifying Effect of Metallic Screens on the Sensitivity. Final rept.

G. Barnea, E. Navon, A. Ginzburg, J. Politch, H. Roehrig, C. E. Dick, and R. C. Placious. 1991, 7p Pub. in Medical Physics 18, n3 p432-438 May/Jun 91.

PB91-236877 Not available NTIS National Inst. of Standards and Technology (PL), Gaithersburg, MD. Ionizing Radiation Div. Biomarkers of OH Radical Damage In vivo. Final rept.

L. R. Karam, D. S. Bergtold, and M. G. Simic. 1991, Sponsored by Defense Nuclear Agency, Washington, DC.

Pub. in Free Rad. Res. Comms. 12-13, p11-16 1991.

PB91-237008 Not available NTIS National Inst. of Standards and Technology (PL),

Gaithersburg, MD. Ionizing Radiation Div. Sensitometry of the Response of a New Radiochromic Film Dosimeter to Gamma Radiation and Electron Beams.

Final rept

W. L. McLaughlin, C. Yun-Dong, C. G. Soares, A. Miller, G. Van Dyk, and D. F. Lewis. 1991, 12p

Pub. in Nuclear Instruments and Methods in Physics Research A302, p165-176 1991.

PB91-237388 Not available NTIS National Inst. of Standards and Technology (PL), Gaithersburg, MD. Ionizing Radiation Div. Calibration of Ophthalmic Applicators at NIST: A Revised Approach. Final rept.

C. G. Soares. 1991, 7p

Pub. in Medical Physics 18, n4 p787-793 Jul/Aug 91.

### **Toxicology**

PB91-162032 Not available NTIS National Inst. of Standards and Technology (IMSE), Gaithersburg, MD. Polymers Div.

Newest Approaches to Quantitative Assessment of Bioactive Organotins.

Final rept.

I. C. Felkner, B. Worthy, G. J. Olson, and F. E. Brinckman, 1989, 14p

Pub. in Chemical Speciation and Bioavailability 1, n3 p79-92 Oct 89.

PB91-187070 Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Chemical Kinetics Div.

Base Modifications In Plasmid DNA Caused by Potassium Permanganate.

Final rept.

S. A. Akman, J. Doroshow, and M. Dizdaroglu. 1990,

Pub. in Archives of Biochemistry and Biophysics 282, n1 p202-205 Oct 90.

PB91-187104 Not available NTIS National Inst. of Standards and Technology (CSTL), Gaithersburg, MD. Biotechnology Div.

Copper-Ion-Dependent Damage to the Bases in DNA in the Presence of Hydrogen Peroxide. Final rept.

O. I. Aruoma, B. Halliwell, E. Gajewski, and M. Dizdaroglu. 1991, 4p Pub. in Biochemistry Jnl. 273, p601-604 1991.

PB91-187112 Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Chemical Kinetics Div. Damage to the Bases in DNA Induced by Hydrogen Peroxide and Ferric Ion Chelates.

Final rept.

O. I. Aruoma, B. Halliwell, E. Gajewski, and M. Dizdaroglu. 1989, 4p

Pub. in Jnl. of Biological Chemistry 264, n34 p20509-20512, 5 Dec 89.

Not available NTIS National Inst. of Standards and Technology (CSTL), Gaithersburg, MD. Biotechnology Div.

Chemical Determination of Free Radical-Induced Damage to DNA.

Final rept.

M. Dizdaroglu. 1991, 18p

Sponsored by Department of Energy, Washington, DC. Pub. in Free Radical Biology and Medicine 10, p225-

PB91-187492 Not available NTIS National Inst. of Standards and Technology (CSTL), Gaithersburg, MD. Biotechnology Div.

Modification of Bases in DNA by Copper Ion-1,10-Phenanthroline Complexes.

Final rept.

M. Dizdaroglu, O. I. Aruoma, and B. Halliwell, 1990,

Pub. in Biochemistry 29, n36 p8447-8451 1990.

PB91-187518 Not available NTIS National Inst. of Standards and Technology (CSTL), Gaithersburg, MD. Biotechnology Div.

Structure and Mechanism of Hydroxyl Radical-Induced Formation of a DNA-Protein Cross-Link Involving Thymine and Lysine in Nucleohistone. Final rept.

M. Dizdaroglu, and E. Gajewski. 1989, 5p Pub. in Cancer Research 49, p3463-3467, 1 Jul 89.

PB91-187526 Not available NTIS National Inst. of Standards and Technology (CSTL), Gaithersburg, MD. Biotechnology Div.

Chemical Nature of In vivo DNA Base Damage in Hydrogen Peroxide-Treated Mammalian Cells. Final rept.

M. Dizdaroglu, Z. Nackerdien, B. C. Chao, E. Gajewski, and G. Rao. 1991, 3p

Sponsored by Department of Energy, Washington, DC., and National Science Foundation, Washington, DC

Pub. in Archives of Biochemistry and Biophysics 285, n2 p388-390 Mar 91.

PB91-189217 Not available NTIS National Inst. of Standards and Technology (CSTL), Gaithersburg, MD. Biotechnology Div.

Damage to the DNA Bases In Mammalian Chromatln by Hydrogen Peroxide in the Presence of Ferric and Cuprlc Ions.

Final rept.

M. Dizdaroglu, G. Rao, B. Halliwell, and E. Gajewski.

Sponsored by Department of Energy, Washington, DC. Pub. in Archives of Biochemistry and Biophysics 285, n2 p317-324 Mar 91.

PB91-189357 Not available NTIS National Inst. of Standards and Technology (CSTL), Gaithersburg, MD. Biotechnology Div.

Bleomycln-Dependent Damage to the Bases In DNA Is a Minor Side Reaction. Final rept.

E. Gajewski, O. I. Aruoma, M. Dizdaroglu, and B. Halliwell. 1991, 5p

Pub. in Biochemistry 30, n9 p2444-2448 1991.

Not available NTIS PB91-189373 National Inst. of Standards and Technology (CSTL), Gaithersburg, MD. Biotechnology Div.

Modification of DNA Bases in Mammallan Chromatin by Radiation-Generated Free Radicals.

Final rept.

E. Gajewski, G. Rau, Z. Nackerdien, and M. Dizdaroglu. 1990, 7p Pub. in Biochemistry 29, n34 p7876-7882 1990.

### **MILITARY SCIENCES**

### Logistics, Military Facilities, & Supplies

Not available NTIS National Inst. of Standards and Technology (NCSL), Gaithersburg, MD. Information Systems Engineering Div

Data Management Standards in Computer-Aided Acquisition and Logistic Support (CALS).

Final rept. D. K. Jefferson, 1990, 30p

Pub. in Proceedings of Technology for Space Station Evolution Workshop, Dallas, TX., January 16-19, 1990, v2 p197-226 1990.

PC A05/MF A01 PB91-167247 National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Center for Building Technology. Field Study of the Performance of EPDM Roofing at Air Force Facilities.

W. J. Rossiter, J. F. Seiler, W. P. Spencer, and P. E. Stutzman. Jan 91, 78p NISTIR-4504
Sponsored by Air Force Engineering and Services Center, Tyndall AFB, FL.

PC A04/MF A01 PB91-167296 National Inst. of Standards and Technology (NCSL),

Gaithersburg, MD. Raster Graphics Conformance Testing. F. E. Spielman. Feb 91, 54p NISTIR-4524

PB91-178889 PC A12/MF A02 National Inst. of Standards and Technology (NCSL), Gaithersburg, MD.

Collection of Technical Studies Completed for the Computer-Aided Acquisition and Logistic Support (CALS) Program. Fiscal Year 1988. Volume 1 of 3. Text, Security and Data Management. Rept. for Oct 87-Sep 88.

R. S. Morgan. Apr 90, 253p NISTIR-4315 See also PB91-178897 and PB91-178905. Sponsored by Assistant Secretary of Defense (Production and Lo-

gistics), Washington, DC. Computer-Aided Acquisition and Logistic Support Program.

PC A21/MF A03 PB91-178897 National Inst. of Standards and Technology (NCSL), Gaithersburg, MD.
Collection of Technical Studies Completed for the

Computer-Aided Acquisition and Logistic Support (CALS) Program, Fiscal Year 1988. Volume 2 of 3. Graphics, CGM MIL-SPEC.
Rept. for Oct 87-Sep 88.

R. S. Morgan. Mar 91, 482p NISTIR-4316 See also PB91-178889 and PB91-178905. Sponsored by Assistant Secretary of Defense (Production and Logistics), Washington, DC. Computer-Aided Acquisition

and Logistic Support Program.

PB91-178905 PC A08/MF A01 National Inst. of Standards and Technology (NCSL), Gaithersburg, MD.

Collection of Technical Studies Completed for the Computer-Aided Acquisition and Logistic Support (CALS) Program, Fiscal Year 1988. Volume 3 of 3. CGM Registration.
Rept. for Oct 87-Sep 88.

R. S. Morgan. Apr 90, 173p NISTIR-4317 See also PB91-178897 and PB91-178889. Sponsored by Assistant Secretary of Defense (Production and Logistics), Washington, DC. Computer-Aided Acquisition and Logistic Support Program. PB91-184812 PC A03/MF A01 National Inst. of Standards and Technology (NCSL), Gaithersburg, MD.

Standard Generalized Markup Language Encoding of the Office Document Architecture Document Application Profile.

R. B. Wilson. Apr 91, 34p NISTIR-4547

PC A06/MF A01 PB91-187708 National Inst. of Standards and Technology (CSL), Gaithersburg, MD.

Tiled Raster Graphics and MIL-R-28002A: A Tutorial and Implementation Guide.

F. E. Spielman, and L. H. Sharpe. Apr 91, 106p NISTIR-4567

Sponsored by Assistant Secretary of Defense (Production and Logistics), Washington, DC. Computer-Aided Acquisition and Logistic Support Program.

PB91-193821 PC A03/MF A01 National Inst. of Standards and Technology (CSL), Gaithersburg, MD.

NIST Support of the CALS Program: 1990 Synop-

S. J. Kemmerer. Jun 91, 22p NISTIR-4609

PB91-194506 PC A14/MF A02 National Inst. of Standards and Technology (CSL), Gaithersburg, MD.

NIST Support for the Computer-Aided Acquisition and Logistic Support (CALS) Program in the Area of Graphics Standards, Calendar Year 1990. Rept. for Oct 89-Dec 90.

D. R. Benigni. May 91, 311p NISTIR-4579 See also PB90-228016 and PB90-257759. Sponsored by Office of the Secretary of Defense, Washington,

PC A99/MF A06 PB92-112440 National Inst. of Standards and Technology (CAML), Gaithersburg, MD. Office of Applied Economics. Economic Analysis for Military Construction (MILCON) Design. Concepts, Techniques, and Applications for the Analyst. Instructor's Manual. R. T. Ruegg, and S. K. Fuller. Sep 91, 637p NISTIR-90/4256

See also Student's manual, PB92-112457. Sponsored by Corps of Engineers, Huntsville, AL. Huntsville Training Div.

PB92-112457 PC A21/MF A04 National Inst. of Standards and Technology (CAML), Gaithersburg, MD. Office of Applied Economics. Economic Analysis for Military Construction (MILCON) Design. Concepts, Techniques, and Ap-

plications for the Analyst. Student's Manual. R. T. Ruegg, and S. K. Fuller. Sep 91, 476p NISTIR-90/4255

See also Instructor's manual, PB92-112440. Sponsored by Corps of Engineers, Huntsville, AL. Huntsville Training Div.

### NATURAL RESOURCES & EARTH SCIENCES

### Cartography

PB91-147678 Not available NTIS National Bureau of Standards (NEL), Gaithersburg, MD. Mathematical Analysis Div.

Non-Linear Contour-to-Grid Digital Interpolation. Final rept.

B. A. Mandel. 1986, 9p See also AD-A180 632

Pub. in Proceedings of DOD Mapping, Charting, and Geodesy (MC&G) Conference, Alexandria, VA., May 8, 1986, 9p.

### **Forestry**

PB91-143305 PC A04/MF A01 National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Center for Fire Research. Canadian Mass Fire Experiment, 1989. Final rept.

J. G. Quintiere. Nov 90, 64p NISTIR-4444 Sponsored by Defense Nuclear Agency, Washington,

### Geology & Geophysics

PB91-203026 Not available NTIS National Inst. of Standards and Technology (NML), Boulder, CO. Quantum Physics Div. Lunar Laser Ranging. Final rept. J. E. Faller, and J. O. Dickey. 1990, 2p

Pub. in EOS 71, n21 p725-726, 22 May 90

PB91-237396 Not available NTIS National Bureau of Standards (NML), Gaithersburg, MD. Gas and Particulate Science Div. Accelerator (14)C Dating of Late Pleistocene Me-

gafauna. Final rept. T. Stafford, 1988, 3p

Pub. in Current Research in the Pleistocene, v5 p41-43 1988

PB91-237404 Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Gas and Particulate Science Div. Accelerator Radiocarbon Dates on Charcoal, Shell, and Human Bone from the Del Mar Site, California.

T. W. Stafford, and R. A. Tyson. 1989, 7p Pub. in American Antiquity 54, n2 p389-395 1989.

### Mineral Industries

PB91-144337 PC A05/MF A01 Maryland Univ., College Park. Dept. of Mechanical En-

Investigation of Simulated Oil-Well Blowout Fires. Annual rept.

J. P. Gore, S. M. Skinner, and U. S. Ip. Nov 90, 82p NIST/GCR-90/581 Grant NANB8D0834

Sponsored by National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Center for Fire Research.

PB91-231597 PC A03/MF A01 National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Unmanned Systems Group. Task Decomposition and Algorithm Development for Real-Time Motion Control of a Continuous

Mining Machine. H. M. Huang, J. A. Horst, and R. Quintero. May 91, 46p NISTIR-4596

Sponsored by Bureau of Mines, Pittsburgh, PA.

### **Natural Resource Management**

PC A05/MF A01 Maryland Univ., College Park. Dept. of Fire Protection Engineering.

Development of a Technique to Assess the Adequacy of the Municipal Water Supply for a Residential Sprinkler System.

J. A. Milke, and J. L. Bryan. Nov 91, 83p NBS/GCR-91/600

Grant NANB8D0814

See also PB88-155825. Sponsored by National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Center for Fire Research, and Fire Administration, Emmitsburg, MD.

#### Soil Sciences

PB91-174680 Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Gas and Particulate Science Div. Wawayandaite, a New Calcium Manganese Beryllium Boron Silicate from Franklin, New Jersey. Final rept.

P. J. Dunn, D. R. Peacor, J. D. Grice, F. J. Wicks, and P. H. Chi. 1990, 4p Pub. in American Mineralogist 75, p405-408 1990.

NAVIGATION,

### **Navigation & Guidance System** Components

PB91-195354 Not available NTIS National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Robot Systems Div. Real-Time Algorithms and Data Structures for Underwater Mapping.

Final rept.

D. N. Oskard, T. H. Hong, and C. A. Shafer. 1990, 7p Pub. in IEEE (Institute of Electrical and Electronics Engineers) Transactions on Systems Man and Cybernetics 20, n6 p1469-1475 1990.

### **NUCLEAR SCIENCE &** TECHNOLOGY

### Isotopes

PB92-116789 Not available NTIS National Bureau of Standards (NML), Gaithersburg, MD. Ionizing Radiation Div. Observation of Anomalous Isotope Ratios in SIRIS

Measurements of Molydenum.

Final rept.
W. M. Fairbank, M. T. Spaar, J. E. Parks, and J. M. R. Hutchinson. 1988, 4p

Pub. in Proceedings of International Symposium on Resonance Ionization Spectroscopy and Its Applica-tions (4th), Gaithersburg, MD., April 10-15, 1988, p293-

#### Nuclear Instrumentation

PR91-178855 PC A08/MF A01 National Inst. of Standards and Technology (NML), Gaithersburg, MD. Center for Radiation Research.
Center for Radiation Research. 1990 Technical Ac-C. E. Kuyatt. Feb 91, 158p NISTIR-4506 See also PB90-130279.

PB92-116441 Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Ionizing Radiation Div. Effects of Absorbed Dose Rate, Irradiation Tem-perature and Post-Irradiation Temperature on the Gamma Ray Response of Red Perspex Dosimeters.

Final rept. M. Al-Sheikhly, W. J. Chappas, W. L. McLaughlin, and J. C. Humphreys. 1991, 16p

Pub. in Proceedings of International Symposium on High Dose Dosimetry for Radiation Processing, Vienna, Austria, November 5-9, 1990, p419-434 1991.

## **GUIDANCE. &** CONTROL

PB92-116961 Not available NTIS National Inst. of Standards and Technology (MSEL), Gaithersburg, MD. Polymers Div. Radiochromic Film Dosimeter for Gamma Radiation in the Absorbed-Dose Range 0.1 - 10 kGY.

Final rept. H. M. Khan, M. Farahani, and W. L. McLaughlin.

1991, 4p Pub. in Radiation Physics and Chemistry 38, n4 p395-398 1991

Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Ionizing Radiation Div.

### **NUCLEAR SCIENCE & TECHNOLOGY**

## **Nuclear Instrumentation**

Dosimetry: New Approaches for New Challenges. Final rept

W. L. McLaughlin, 1991, 31p

Pub. in Proceedings of Nordion Gamma Processing Seminar (4th), Ottawa, Ontario, Canada, May 26-31, 1991, p1-31.

PR92-117126 Not available NTIS National Inst. of Standards and Technology (NML), 2-Deoxy-D-Ribose Aqueous Solution as a Gamma-Ray Dosimeter.

Final rept. W. L. McLaughlin, M. Farahani, and J. H. Liang.

1991, 13p

Pub. in Proceedings of International Symposium on High Dose Dosimetry for Radiation Processing, Vienna, Austria, November 5-9, 1990, p159-171 1991.

## Radioactive Wastes & Radioactivity

NUREG/CR-5711 PC A06/MF A02 National Inst. of Standards and Technology, Gaithersburg, MD.

Assessment of Uncertainties in Measurement of pH in Hostile Environments Characteristic of Nuclear Repositories.

Technical rept. 30 Jun 87-28 Feb 91. K. G. Kreider, M. J. Tarlov, and P. H. Huang. Oct 91, 102p

Also available from Supt. of Docs. See also NUREG/ CR-5166 and NUREG/CR-5484. Sponsored by Nuclear Regulatory Commission, Washington, DC. Div. of Engineering.

NUREG/CR-5716 PC A05/MF A01 Arizona Univ., Tucson. Dept. of Soil and Water Science

Model Validation at the Las Cruces Trench Site.

R. G. Hills, and P. J. Wierenga. Jun 91, 94p
Also available from Supt. of Docs. Prepared in cooperation with New Mexico State Univ., Las Cruces. Dept. of Mechanical Engineering. Sponsored by Nuclear Regulatory Commission, Washington, DC. Div. of Engineering.

## Reactor Engineering & Nuclear Power **Plants**

PC A10/MF A03 National Inst. of Standards and Technology (EEEL), Gaithersburg, MD. Electricity Div. Annotated Bibliography: Diagnostic Methods and

Measurement Approaches to Detect Incipient Defects Due to Aging of Cables.

F. D. Martzloff, and A. G. Perrey. Jul 91, 224p NISTIR-4485

Sponsored by Nuclear Regulatory Commission, Washington, DC.

PB92-123074 PC A04/MF A01 National Inst. of Standards and Technology, Gaithersburg, MD.

Fire-Plume-Generated Ceiling Jet Characteristics and Convective Heat Transfer to Ceiling and Wall Surfaces in a Two-Layer Zone-Type Fire Environment: Uniform Temperature Ceiling and Walls.
L. Y. Cooper. Nov 91, 58p NISTIR-4705

Sponsored by Nuclear Regulatory Commission, Washington, DC

PB92-126598 PC A05/MF A01 National Inst. of Standards and Technology (BFRL),

Gaithersburg, MD.

Predicting the Remaining Service Life of Concrete.

J. R. Clifton. Nov 91, 84p NISTIR-4712

See also PB89-215362 and PB91-107219. Prepared in cooperation with Oak Ridge National Lab., TN., and Nuclear Regulatory Commission, Washington, DC.

## Reactor Fuels & Fuel Processing

Not available NTIS PB91-158733 National Inst. of Standards and Technology (MSEL),

Gaithersburg, MD. Metallurgy Div.

Corrosion Behavior of Zirconium Alloy Nuclear Fuel Cladding.

Final rept.

A. C. Fraker, and J. Harris. 1990, 8p Sponsored by Nuclear Regulatory Commission, Washington, DC. Office of Nuclear Material Safety and Safe-

guards.
Pub. in Materials Research Society Symposium Proceedings, v176 p549-556 1990.

#### **Reactor Materials**

PB91-189316 Not available NTIS National Inst. of Standards and Technology (MSEL), Gaithersburg, MD. Metallurgy Div.
Plastic Zone Formation Around an Arresting

Final rept. R. J. Fields, and R. deWit. 1990, 8p

Sponsored by Nuclear Regulatory Commission, Washington, DC.

Pub. in International Jnl. of Fracture 42, n3 p231-238

# OCEAN TECHNOLOGY & **ENGINEERING**

## Biological Oceanography

PC A03/MF A01 National Inst. of Standards and Technology (CSTL), Gaithersburg, MD.

Alaska Marine Mammal Tissue Archival Project: Revised Collection Protocol.

P. R. Becker, S. A. Wise, B. J. Koster, and R. Zeisler. Mar 91, 40p NISTIR-4529
Prepared in cooperation with National Ocean Service,

Anchorage, AK. Arctic Environmental Assessment Center. Sponsored by Minerals Management Service, Anchorage, AK. Alaska Outer Continental Shelf Office.

## Marine Engineering

PB91-158782 Not available NTIS National Bureau of Standards (NEL), Gaithersburg, MD. Robot Systems Div. Real-Time Hierarchical Planning for Multiple Mobile Robots.

Final rept.

M. Herman, and J. S. Albus. 1987, 10p

Pub. in Proceedings of DARPA Knowledge-Based Planning Workshop, Austin, TX., December 8-10, 1987, p22-1-22-10.

PB92-108935 PC A05/MF A01 National Inst. of Standards and Technology (BFRL), Gaithersburg, MD.

Navy Safety Center Data on the Effects of Fire Protection Systems on Electrical Equipment.

R. S. Levine. Apr 91, 86p NISTIR-4620

Portions of this document are not fully legible. Sponsored by Nuclear Regulatory Commission, Washington, DC.

## Physical & Chemical Oceanography

PB91-149237 Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Organic Analytical Research Div. Preparation and Analysis of a Marine Sediment Reference Material for the Determination of Trace Organic Constituents.

Final rept.

M. M. Schantz, B. A. Benner, S. N. Chesler, B. J. Koster, and K. E. Hehn. 1990, 14p

Pub. in Fresenius Jnl. of Analytical Chemistry 338, p501-514 1990.

# ORDNANCE

## Ammunition, Explosives, & **Pyrotechnics**

PB92-116292 PC A09/MF A02

National Inst. of Standards and Technology (EEEL), Boulder, CO. Electromagnetic Fields Div. Quantifying Standard Performance of Electromagnetic-Based Mine Detectors.

W. L. Gans, R. G. Gever, and W. K. Klemperer. Oct

91, 180p NISTIR-3982 See also AD-A226 626. Sponsored by Army Belvoir

Research Development and Engineering Center, Fort

## **Combat Vehicles**

Not available NTIS PB91-134726 National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Robot Systems Div. Control System Architecture for Unmanned

Ground Vehicles.

Final rept. S. Szabo, H. Scott, and R. Kilmer. 1990, 9p

Pub. in Proceedings of AUVS-90 Technical Symposium, Dayton, OH., July 30-August 1, 1990, p258-266.

# PHOTOGRAPHY & RECORDING DEVICES

Integrated theoretical and experimental study of the thermophysical properties of fluid mixtures. Progress report (February 1990-February 1991).

J. F. Ely. Nov 90, 24p DOE/ER/13992-T1

Contract AI05-89ER13992

Sponsored by Department of Energy, Washington, DC.

Final rept. R. L. Rowley, and J. F. Ely. 1991, 16p Pub. in Molecular Physics 72, n4 p831-846 1991.

## **Recording Devices**

PC A03/MF A01 PB91-132258 National Inst. of Standards and Technology, Gaithersburg, MD.

Overview of the Product Data HyperStandard CD-**ROM Prototype.** 

S. Ressler, Nov 90, 16p NISTIR-4470

PC A04/MF A01 PB92-126549 National Inst. of Standards and Technology (CSL),

Gaithersburg, MD.

3480 Type Tape Cartridge: Potential Data Storage
Risks, and Care and Handling Procedures to Minimize Risks.

Final rept. M. P. Williamson. Nov 91, 60p NIST/SP-500/199 Also available from Supt. of Docs. See also PB83-237271 and PB88-233135. Sponsored by National Environmental Satellite, Data, and Information Service, Washington, DC.

PB91-134585 Not available NTIS National Inst. of Standards and Technology (NEL), Boulder, CO. Thermophysics Div. Phase Equilibria from the One-Fluid Model. Final rept.

K. D. Romig, and H. J. M. Hanley, 1989, 3p Sponsored by Department of Energy, Washington, DC. Pub. in Cryogenics 29, n1 p65-67 Jan 89.

PB91-147892 Not available NTIS National Bureau of Standards (NEL), Gaithersburg, MD. Fire Measurement and Research Div. Development of a Line Camera for Real-Time Measurements of Concentration in Turbulent Flow Fields. Final rept.

W. M. Pitts. 1987, 9p Contract AFOSR-ISSA86-0008 Sponsored by Air Force Office of Scientific Research, Bolling AFB, Washington, DC.

Pub. in Proceedings of International Congress on Aplications of Lasers and Electrooptics (5th), Arlington, VA., November 10-13, 1986, p7-15 1987.

Not available NTIS PR91-148031 National Inst. of Standards and Technology (NML), Boulder, CO. Chemical Engineering Science Div. Effect of Pipe Surface Finish on Gas Flow Measurement with an Orifice Meter. Final rept.

C. F. Sindt, J. A. Brennan, S. E. McFaddin, and K. M. Kothari. 1990, 8p

Sponsored by Gas Research Inst., Chicago, IL.
Pub. in Proceedings of International Gas Research
Conference, Tokyo, Japan, November 6-9, 1989, p1-8 1990.

# **PHYSICS**

## **Acoustics**

Not available NTIS PB92-116847 National Inst. of Standards and Technology (NML), Gaithersburg, MD. Thermophysics Div Accurate Acoustic Measuréments in Gases Under Difficult Conditions.

Final rept. K. A. Gillis, M. R. Moldover, and A. R. H. Goodwin. 1991, 5p

Sponsored by Department of Energy, Washington, DC., and Department of the Navy, Washington, DC. Pub. in Review of Scientific Instruments 62, n9 p2213-2217 Sep 91.

Not available NTIS PB92-117456 National Inst. of Standards and Technology (EEEL), Boulder, CO. Electromagnetic Fields Div. Probe-Corrected Spherical Near-Field Scanning

Theory in Acoustics. Final rept.

R. C. Wittmann. 1991, 4p
Pub. in Proceedings of IEEE (Institute for Electrical and Electronics Engineers) Instrumentation and Measurement Technology Conference Enhancing Productivity with Instrumentation and Measurement Technologies, Atlanta, GA., May 14-16, 1991, p283-286.

National Inst. of Standards and Technology (NML), Gaithersburg, MD. Thermophysics Div. Computer Simulation of Fluid-Fluid Phase Coexistence in Mixtures of Nonadditive Soft Disks.

Not available NTIS

PB91-162263

R. D. Mountain, and A. H. Harvey. 1991, 6p Pub. in Jnl. of Chemical Physics 94, n3 p2238-2243, 1 Feb 91.

PB91-162347 Not available NTIS National Inst. of Standards and Technology (NML), Boulder, CO. Chemical Engineering Science Div. Effect of Pipe Surface Finish on the Orifice Discharge Coefficient. Final rept.

C. F. Sindt, J. A. Brennan, S. E. McFaddin, and R. Wilson, 1989, 8p

Sponsored by Gas Research Inst., Chicago, IL. Pub. in VDI Berichte 768, p49-56 1989.

Not available NTIS PB91-195263 National Inst. of Standards and Technology (NEL), Boulder, CO. Scientific Computing Div. Use of Computer Algebra to Locate Critical Loci in Fluid Mixtures.

Final rept. G. C. Nielson, M. O. McLinden, and G. Morrison. 1990, 10p

Pub. in Jnl. of Symbolic Computation 10, n5 p499-508 Nov 90.

## Fluid Mechanics

PC A03/MF A01 DE91012660 National Inst. of Standards and Technology, Boulder, CO. Thermodynamics Div.

PB91-195636 Not available NTIS National Inst. of Standards and Technology, Boulder, CO. Thermodynamics Div.

PB91-200832 Not available NTIS National Bureau of Standards (NEL), Boulder, CO. Thermophysics Div.

Non-Equilibrium Molecular Dynamics Simulations of Structured Molecules. Part 1. Isomeric Effects

Taking the Measure of Fluid Properties Data Bases.

Final rept.

on the Viscosity of Butanes.

M. E. Baltatu, H. J. M. Hanley, and N. A. Olien. 1987,

Pub. in Mechanical Engineering, p64 Dec 87.

PB91-203000 Not available NTIS National Inst. of Standards and Technology (NML), Boulder, CO. Thermophysics Div.

Analysis of Laminar Vortex Shedding Behind a Circular Cylinder by Computer-Aided Flow Visualization.

Final rept.

B. E. Eaton. 1987, 29p

Sponsored by National Research Council of Canada, Ottawa (Ontario).

Pub. in Jnl. of Fluid Mechanics 180, p117-145 1987.

Not available NTIS PB91-204123 National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Thermophysics Div. Thermodynamic Behavior of Fluids in the Super-

critical Region. Final rept.

S. Tang, and J. V. Sengers. 1991, 4p Contract DE-FG05-88ER13902

Sponsored by Department of Energy, Washington, DC. Pub. in Proceedings of International Symposium on Supercritical Fluids (2nd), Boston, MA., May 20-22, 1991, p254-257.

PB91-222679 PC A03/MF A01 National Inst. of Standards and Technology (CSTL), Boulder, CO. Chemical Engineering Div.

Unsteady Laminar Flow in a Circular Tube: A Test of the HERCOL (Hermitian Collocation) Computer Code.

J. F. Welch, J. A. Hurley, M. P. Glover, R. D. Nassimbene, and M. R. Yetzbacher. May 91, 27p NISTIR-3963

PC A03/MF A01 PB92-112291 National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Applied and Computational Mathematics Div.

Effect of Gravity Modulation on Thermosolutal Convection in an Infinite Layer of Fluid.

B. V. Saunders, B. T. Murray, G. B. McFadden, S. R. Coriell, and A. A. Wheeler. Oct 91, 42p NISTIR-4679 See also PB90-265281.

Not available NTIS PB92-116490 National Inst. of Standards and Technology (CSTL), Boulder, CO. Chemical Engineering Div. Choosing Flow Conditioners and Their Location for Orifice Flow Measurement.

Final rept. J. A. Brennan, C. F. Sindt, M. A. Lewis, and J. L.

Scott. 1991, 5p Contract GRI-5088-271-1680

Sponsored by Gas Research Inst., Chicago, IL. Pub. in Flow Meas. Instrum. 2, p40-44 Jan 91.

## Optics & Lasers

AD-A207 806/1 PC A06/MF A01 National Inst. of Standards and Technology, Gaithersburg, MD.

Annual Report to the Strategic Defense Initiative Organization on the Free-Electron Laser Driven by the NIST CW Microtron.
Annual rept. 1 Apr 88-31 Mar 89.
R. G. Johnson. 5 May 86, 101p
Contract N00014-87-F-0066

AD-A227 310/0 PC A03/MF A01 National Inst. of Standards and Technology, Gaithersburg, MD.
NIST-NRL Free-Electron Laser.

Status rept.

P. H. Debenham, R. L. Ayres, W. A. Cassatt, B. C. Johnson, and R. G. Johnson. 1990, 12p Contract N00014-87-F-0066

AD-A236 746/4 PC A02/MF A01 National Inst. of Standards and Technology, Gaithersburg, MD. Critical Assessment of Optical Properties of CVD

Diamond Films. Interim rept.

A. Feldman, and L. H. Robins. 12 Apr 91, 10p Contract N00014-90-F-0011

AD-A243 097/3 PC A03/MF A01 National Inst. of Standards and Technology, Gaithersburg, MD Use of Diamond as an Optical Material.

Technical rept.
A. Feldman. 27 Sep 91, 17p
Contract N00014-90-F-0011

#### PB90-244708

(Order as PB90-244658) Technische Univ. Muenchen (Germany, F.R.). Lehrstuhl fuer Thermodynamik.

Refractive Index of Water and Steam as Function of Wavelength, Temperature and Density.
Quarterly rept.
P. Schiebener, J. Straub, J. M. H. Levelt Sengers,

and J. S. Gallagher. c1990, 41p Prepared in cooperation with National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Thermophysics Div.

Included in Jnl. of Physical and Chemical Reference Data, v19 n3 p677-717 1990. Available from American Chemical Society, 1155 16th St., NW, Washington, DC 20036.

PB91-132308 PC A10/MF A02 National Inst. of Standards and Technology (NEL), Boulder, CO. Electromagnetic Technology Div. Technical Digest-Symposium on Optical Fiber

Measurements, 1990. G. W. Day, and D. L. Franzen. Sep 90, 211p NIST/

Also available from Supt. of Docs. See also PB89-129555. Prepared in cooperation with Optical Society of America, Washington, DC.

PB91-134106 Not available NTIS National Bureau of Standards (NML), Boulder, CO.

Time and Frequency Div.

Modulatable Narrow-Linewidth Semiconductor Lasers.

Final rept. L. Hollberg, and M. Ohtsu. 1988, 3p See also PB88-239470.

Pub. in Applied Physics Letters 53, n11 p944-946 Sep

Not available NTIS PB91-134130 National Inst. of Standards and Technology (NML), Boulder, CO. Time and Frequency Div.

Accurate Frequency of the 119 mu m Methanol Laser from Tunable Far-Infrared Absorption Spec-Final rept.

M. Inguscio, L. R. Zink, K. M. Evenson, and D. A.

Jennings. 1990, 5p Pub. in IEEE (Institute of Electrical and Electronics Engineers) Jnl. of Quantum Electronics 26, n3 p575-579 Mar 90.

PB91-147207 Not available NTIS National Inst. of Standards and Technology (NEL), Boulder, CO. Electromagnetic Technology Div.
Standard Reference Fibers for Calibration of the Optical Time Domain Reflectometer. Final rept.

B. L. Danielson, C. D. Whittenberg, and T. Drapela.

1989, 4p Pub. in Proceedings of International Instrumentation Symposium (35th), Orlando, FL., May 1-4, 1989, p895-

PB91-147868 Not available NTIS National Inst. of Standards and Technology (NML), Boulder, CO. Chemical Engineering Science Div. Fiber-Optic Fluorescence Array to Study Free Convection in Porous Media. Final rept.

R. A. Perkins, and M. C. Jones, 1989, 6p. Sponsored by Department of Energy, Washington, DC. Office of Basic Energy Sciences.

Pub. in Review of Scientific Instruments 60, n11 p3492-3497 Nov 89.

PB91-148007 Not available NTIS National Inst. of Standards and Technology (NEL), Boulder, CO. Electromagnetic Technology Div Subpicosecond Pulse Compression and Raman Generation Using a Mode-Locked Erbium-Doped Fiber Laser-Amplifier.

Final rept. J. B. Schlager, P. D. Hale, and D. L. Franzen. 1990, 30

Pub. in IEEE (Institute of Electrical and Electronics Engineers) Photonics Technology Letters 2, n8 p562-564 Aug 90.

PB91-148478 PC A99/MF A04 National Inst. of Standards and Technology, Boulder, CO.

Laser Induced Damage in Optical Materials: 1989. Special pub.

H. E. Bennett, L. L. Chase, A. H. Guenther, B. E. Newnam, and M. J. Soileau. Oct 90, 674p NIST/SP-801

Also available from Supt. of Docs. as SN003-003-03061-9. See also report for 1988, PB90-185570. Errata sheet inserted. Proceedings of Annual Symposium on Optical Materials for High-Power Lasers (21st), Boulder, CO., Nov. 1-3, 1989. Prepared in coop. with American Society for Testing and Materials, Philadelphia, PA., SPIE-The International Society for Optical Engineering. Philadelphia cal Engineering, Bellingham, WA.

Not available NTIS PB91-148908 National Inst. of Standards and Technology (NML), Gaithersburg, MD. Radiometric Physics Div. Use of Heterodyne Detection to Measure Optical Transmittance over a Wide Range. Final rept.

A. L. Migdall, B. Roop, Y. C. Zheng, J. E. Hardis, and J. Xia. 1990, 9p Pub. in Applied Optics 29, n34 p5136-5144, 1 Dec 90.

PB91-149138 Not available NTIS National Bureau of Standards (NML), Gaithersburg, MD. Temperature and Pressure Div.

Dispersion of the Electronic Contribution to the Third-Order Nonlinear Susceptibility of H2. Final rept.

G. J. Rosasco, and W. S. Hurst. 1986, 6p. Pub. in Jnl. of the Optical Society of America B 3, n10 p1251-1256 Oct 86.

PB91-149195 Not available NTIS National Bureau of Standards (NEL), Boulder, CO. Electromagnetic Technology Div.

Laser Measurements.

Final rept.

A. A. Sanders. 1983, 3p

Pub. in Proceedings of Measurement Science Conference, Palo Alto, CA., January 20-21, 1986 p198-200

PB91-158709 Not available NTIS National Bureau of Standards (IMSE), Gaithersburg, MD. Ceramics Div.

Stoichiometry of Reactively Evaporated Films. Final rept.

A. Feldman, E. N. Farabaugh, and Y. N. Sun. 1988, 4p

Pub. in Proceedings of Optical Interference Coatings Topical Meeting, Tucson, AZ., April 12-15, 1988, p14-

PB91-158972 Not available NTIS National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Applied and Computational Mathematics Div.

Algorithm and Computer Program for the Calculation of Envelope Curves.

Final rept.

M. McClain, A. Feldman, D. Kahaner, and X. T. Ying. 1991, 4p

See also PB90-155409.

Pub. in Computers in Physics, p45-48 Jan/Feb 91.

PB91-174854 Not available NTIS National Bureau of Standards (NML), Gaithersburg, MD. Atomic and Plasma Radiation Div.

Laser-Driven Ionization and Photoabsorption Spectroscopy of Atomic Ions.

Final rept.

W. T. Hill, and C. L. Cromer. 1987, 12p Pub. in Springer Ser. Opt. Sci. 54, p183-194 1987.

PB91-175141 Not available NTIS National Inst. of Standards and Technology (NEL), Boulder, CO. Electromagnetic Technology Div. Semiconductor Claddings on Glass Waveguides for Polarizers and Detectors. Final rept.

D. L. Veasey, D. R. Larson, R. J. Phelan, and T. E. Batchman. 1990, 1p

Pub. in Proceedings of Optical Society of America Annual Meeting Technical Digest, Boston, MA., November 4-9, 1990, pMA5.

PB91-175596 Not available NTIS National Inst. of Standards and Technology (NML), Boulder, CO. Quantum Physics Div. Correlated Spontaneous Emission in a Zeeman Laser.

Final rept.

M. P. Winters, and J. L. Hall. 1990, 4p Contract N00014-89-J-1227, Grant NSF-PHY86-

Sponsored by Office of Naval Research, Arlington, VA., and National Science Foundation, Washington,

Pub. in Physical Review Letters 65, n25 p3116-3119, 17 Dec 90.

## Optics & Lasers

PB91-187096 Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Radiometric Physics Div.

Temperature Dependence of High Accuracy-Photometer Heads. Final rept.

G. Andor. 1989, 2p

Pub. in Applied Optics 28, n22 p4733-4734, 15 Nov 89.

Not available NTIS National Inst. of Standards and Technology (MSEL), Gaithersburg, MD. Ceramics Div.

Design Diagrams for Heavy Metal Fluoride Glass

Final rept.

D. Cranmer, T. Chuang, S. Freiman, and A. Raynes. 1990, 17p

Sponsored by Naval Research Lab., Washington, DC., and Center for Naval Analyses, Alexandria, VA. Naval

Warfare Operations Div. Pub. in Proceedings of High Power Laser Optical Components Topical Meeting, China Lake, CA., October 30-31, 1989, p98-114 1990.

PB91-187617 PC A06/MF A01 National Inst. of Standards and Technology, Gaithersburg, MD.

Journal of Research of the National Institute of Standards and Technology. March-April 1991. Volume 96, Number 2.

1991, 109p

Also available from Supt. of Docs. as SN703-027-00039-3. See also PB91-187625 through PB91-187682 and PB91-184853. Library of Congress catalog card no. 89-656121.

PB91-187674

(Order as PB91-187617, PC A06/MF A01) National Inst. of Standards and Technology, Gaithersburg, MD.

Bidirectional Scattering Distribution Function (BSDF): A Systematized Bibliography.
C. Asmail. 1991, 9p
Included in Jnl. of Research of the National Institute of

Standards and Technology, v96 n2 p215-223 Mar/Apr

PB91-189332 Not available NTIS National Inst. of Standards and Technology (IMSE),

Gaithersburg, MD. Ceramics Div.

Refractive Index Gratings in Rare-Earth-Doped Alkaline Earth Glasses.

Final rept.

V. A. French, R. C. Powell, D. H. Blackburn, and D. C. Cranmer. 1991, 5p Sponsored by Army Research Office, Research Trian-

gle Park, NC. Pub. in Jnl. of Applied Physics 69, n2 p913-917, 15 Jan

Not available NTIS PB91-189738 National Inst. of Standards and Technology (NML),

Gaithersburg, MD. Electricity Div.
Effects of Colored Pump Noise on Intensity Correlations of a Single Mode Dye Laser.

Final rept.

P. D. Lett, and E. C. Gage. 1989, 7p Pub. in Physical Review A 39, n3 p1193-1199, 1 Feb 89

Not available NTIS PB91-189803 National Inst. of Standards and Technology (NML), Gaithersburg, MD. Molecular Spectroscopy Div. Fourier Transform Infrared Spectroscopy at the NIST: High Temperature Molecules and Atmospheric Molecules.
Final rept.

Final rept.
A. G. Maki. 1989, 4p
Pub. in Proceedings of High Resolution Fourier Transform Spectroscopy Topical Meeting, Santa Fe, NM., February 13-15, 1989, p98-101.

PB91-195644 Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Radiometric Physics Div.

Roughened Quartz Surfaces and Teflon as Small-Angle Diffusers and Depolarizers between 200 and 400 nm.

Final rept. R. D. Saunders, and H. J. Kostkowski. 1989, 4p Pub. in Applied Optics 28, n15 p3242-3245 1989.

PB91-203042 Not available NTIS National Bureau of Standards (IMSE), Gaithersburg, MD. Ceramics Div.

Alternate Representation of Prism Refraction for Light Incident at the Brewster Angle.

Final rept. A. Feldman. 1988, 2p

Pub. in Applied Optics 27, n22 p4608-4609 1988.

PB91-203109 Not available NTIS National Inst. of Standards and Technology (NEL), Boulder, CO. Electromagnetic Technology Div. Frequency Stabilization of a Tunable Erbium-Doped Fiber Laser. Final rept.

S. L. Gilbert. 1991, 3p Sponsored by Naval Sea Systems Command, Wash-

Pub. in Optics Letters 16, n3 p150-152, 1 Feb 91.

Not available NTIS PB91-203158 National Bureau of Standards (NEL), Gaithersburg, MD. Precision Engineering Div.
Note on the Precision Cementing of Small Optical

Components. Final rept.

A. W. Hartman. 1988, 2p

Pub. in Review of Scientific Instruments 59, n12 p2617-2618 1988.

PB91-203802 Not available NTIS National Inst. of Standards and Technology (NEL),

Boulder, CO. Electromagnetic Fields Div.
New Triple Correlator Design for the Measurement of Ultrashort Laser Pulses.

Final rept.

N. G. Paulter, and A. K. Majumdar. 1991, 6p Pub. in Optics Communications 81, n1-2 p95-100, 1 Feb 91.

PB91-203984 Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Atomic and Plasma Radiation Div. Precise Laser Wavelength Measurements: What Can We Learn from Classical Spectroscopy.

Final rept.

p169-173 Jan 91.

Co.J. Sansonetti. 1989, 6p Pub. in Proceedings of International Laser Science Conference (4th), Advances in Laser Science IV, Atlanta, GA., 1988, p548-553 1989.

PB91-204016 Not available NTIS National Inst. of Standards and Technology (NML), Boulder, CO. Quantum Physics Div.

Production and Diagnosis of a Highly Spin-Polarized Na Beam. Final rept.

G. W. Schinn, X. L. Han, and A. Gallagher. 1991, 5p Contract DE-FG02-87ER13720 Sponsored by Department of Energy, Washington, DC. Office of Basic Energy Sciences. Pub. in Jnl. of the Optical Society of America B 8, n1

PB91-204180 Not available NTIS

National Inst. of Standards and Technology (NML), Boulder, CO. Quantum Physics Div.

Correlated Spontaneous Emission in a Zeeman Laser.

Final rept.

M. P. Winters, and J. L. Hall. 1990, 9p Contract N00014-89-J-1227, Grant NSF-PHY86-04504

See also PB91-175596. Sponsored by Office of Naval Research, Arlington, VA., and National Science Foundation, Washington, DC.
Pub. in New Frontiers in Quantum Electrodynamics

and Quantum Optics, p193-201 1990.

PB91-237065 Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Atomic and Plasma Radiation Div. Exploding Foil Photoionization X-ray Laser. Final rept.

P. D. Morley, and J. Sugar. 1988, 4p Pub. in Physical Review A 38, n6 p3139-3142 1988.

PB91-237156 Not available NTIS National Inst. of Standards and Technology (EEEL), Boulder, CO. Electromagnetic Fields Div. New Triple Correlation Technique for Measuring Ultrashort Laser Pulses.

Final rept.

N. G. Paulter, and A. Majumdar. 1991, 12p See also PB91-203802.

Pub. in Review of Scientific Instruments 62, n3 p567-578 Mar 91.

PB92-102185 Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Radiometric Physics Div. LBIR Facility User Handbook.

Final rept. R. U. Datla, S. C. Ebner, J. Proctor, and A. C. Parr. Jun 91, 31p NIST/HB-147

Sponsored by Army Strategic Defense Command, Huntsville, AL.

PB92-116532 Not available NTIS National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Precision Engineering Div. Light-Scattering Measurement of the RMS Slopes of Rough Surfaces. Final rept.

L. X. Cao, T. V. Vorburger, A. G. Lieberman, and T. R. Lettieri. 1991, 7p Pub. in Applied Optics 30, n22 p3221-3227, 1 Aug 91.

Not available NTIS National Inst. of Standards and Technology (EEEL), Boulder, CO. Electromagnetic Fields Div. Diffraction by a Half-Plane in a Lossy Medium.

Final rept. D. A. Hill. 1991, 3p

Sponsored by Army Belvoir Research and Development Center, Fort Belvoir, VA. Pub. in Jnl. of Applied Physics 69, n12 p8405-8407, 15

Jun 91.

Not available NTIS PB92-116896 National Inst. of Standards and Technology (NML), Boulder, CO. Time and Frequency Div. CW Dye Lasers.

Final rept. L. Hollberg. 1990, 54p

Pub. in Dye Laser Principles with Applications, Chapter 5, p185-238 1990.

PB92-116904 Not available NTIS National Inst. of Standards and Technology (NML), Boulder, CO. Time and Frequency Div.

Diode Lasers and Their Application to Spectroscopy. Final rept.

L. Hollberg. 1990, 9p

Pub. in Applied Laser Spectroscopy, p117-125 1990.

PB92-126531 PC A08/MF A02 National Inst. of Standards and Technology (EEEL), Boulder, CO. Electromagnetic Technology Div. Modified Airy Function and WKB Solutions to the Wave Equation.

A. K. Ghatak, R. L. Gallawa, and I. C. Goyal. Nov 91, 175p NIST/MONO-176

Also available from Supt. of Docs. See also PB91-236752. Prepared in cooperation with Indian Inst. of Tech., New Delhi. Dept. of Physics.

## Plasma Physics

AD-A227 656/6 PC A02/MF A01 National Inst. of Standards and Technology, Boulder, CO

Liquid and Solid Ion Plasmas. Annual rept. 1 Oct 89-31 Sep 90.

D. J. Wineland, and J. J. Bollinger. 15 Sep 90, 10p Contract N00014-89-F-0020

PB91-147504 Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Atomic and Plasma Radiation Div. Overview of the Ion Dynamic Effect In Line Broadening, and a Generalization of the Unified Theory. Final rept.

D. E. Kelleher, D. H. Oza, J. Cooper, and R. L. Greene. 1990, 7p

Pub. in Jnl. of Quantitative Spectroscopy and Radiative Transfer 44, n1 p101-107 1990.

PB91-158618 Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Radiometric Physics Div.

Relative Populations of Excited Levels within the Ground Configuration of SI-Like Cu, Zn, Ge, and Se lons.

R. U. Dalta, J. R. Roberts, and A. K. Bhatia. 1991, 4p Contract DE-EA-77-A-01-6010

Sponsored by Department of Energy, Washington, DC. Pub. in Physical Review A 43, n2 p1110-1113, 15 Jan

PB92-117225 Not available NTIS National Inst. of Standards and Technology (EEEL), Gaithersburg, MD. Electricity Div.

Off-Axis Measurements of Ion Kinetic Energies in RF Plasmas.

Final rept.

S. B. Radovanov, J. K. Olthoff, and R. J. Van Brunt. 1991, 2p

Sponsored by SEMATECH, Austin, TX.

Pub. in Proceedings of International Conference on Phenomena in Ionized Gases (20th), Barga, Italy, July 8-12, 1991, p835-836.

PB92-126473 PC A04/MF A01 National Inst. of Standards and Technology (NML), Gaithersburg, MD. Ionizing Radiation Div.

Mass Energy-Transfer and Mass Energy-Absorption Coefficients, including in-Flight Positron Annihilation for Photon Energies 1 keV to 100 MeV.
P. D. Higgins, F. H. Attix, J. H. Hubbell, S. M. Seltzer, M. J. Berger, and C. H. Sibata. Nov 91, 70p NISTIR-

4680

See also PB87-116141, PB88-109830, UCRL-50400-V6-REV-2 and UCRL-50174-SEC-2-R1. Prepared in cooperation with Cleveland Clinic Foundation, OH. Dept. of Radiation Therapy, and Wisconsin Univ.-Madison. Dept. of Medical Physics.

## **Radiofrequency Waves**

PB91-203505 Not available NTIS National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Precision Engineering Div.

Computed Fields Near the Edge of a Dielectric Wedge. Final rept.

E. Marx. 1990, 5p

Pub. in IEEE (Institute of Electrical and Electronics Engineers) Transactions on Antennas and Propagation 38, n9 p1438-1442 Sep 90.

PB91-203513 Not available NTIS National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Precision Engineering Div. Scattering by an Arbitrary Cylinder at a Plane Interface. Final rept.

E. Marx. 1989, 10p Pub. in IEEE (Institute of Electrical and Electronics Engineers) Transactions on Antennas and Propagation 37, n5 p619-628 1989.

## **Solid State Physics**

AD-A231 818/6 PC A02/MF A01 National Inst. of Standards and Technology (IMSE), Gaithersburg, MD. Ceramics Div. Influence of Filament Geometry on Hot Filament Growth of Diamond Films.

Technical rept. E. N. Farabaugh, A. Felfman, and L. Robins. 5 Feb 91, 8p Rept no. TR-1 Contract N00014-90-F-0011

AD-A243 093/2 PC A03/MF A01 National Inst. of Standards and Technology, Gaithersbura, MD.

High Resolution Electron Microscopy of Diamond Film Growth Defects and their Interactions. Technical rept.

D. Shechtman, E. N. Farabaugh, L. H. Robins, and A. Feldman. 25 Sep 91, 25p Contract N00014-90-F-0011

AD-A243 096/5 PC A03/MF A01 National Inst. of Standards and Technology, Gaithersburg, MD.

Transmission Electron Microscopy of the CVD Diamond Film/Substrate Interface.

Technical rept. D. Shechtman. 27 Sep 91, 14p Contract N00014-90-F-0011

AD-A243 220/1 PC A03/MF A01 National Inst. of Standards and Technology, Gaithersburg, MD.

Spatially and Spectrally Resolved Cathodoluminescence Measurements of CVD-Grown Diamond Particles and Films.

Technical rept.
L. H. Robins, E. N. Farabaugh, and A. Feldman. 27
Sep 91, 15p Rept no. NIST-TR-6
Contract N00014-90-F-0011

DE91016275 PC A03/MF A01 National Inst. of Standards and Technology, Boulder,

Integrity tests for high-(Tc) and conventional critical-current measurements systems. L. F. Goodrich, and S. L. Bray. 1989, 15p CONF-

Contract Al01-86ER52132

International cryogenic materials conference, Los Angeles, CA (United States), 24-28 Jul 1989. Sponsored by Department of Energy, Washington, DC.

N91-20208/5

(Order as N91-20207/7, PC A05/MF A01) National Bureau of Standards (IMSE), Gaithersburg,

High T(sub C) Superconductors: Are They Magnet-

R. D. Shull. Jan 90, 5p In NASA, Langley Research Center, National Educa-tors' Workshop: Update 1988. Standard Experiments in Engineering Materials Science and Technology p 1-

PATENT-4 954 481 Not available NTIS Department of Commerce, Washington, DC. Superconductor-Polymer Composites. Patent.

A. S. DeReggi, C. K. Chiang, and G. T. Davis. Filed 29 Dec 88, patented 4 Sep 90, 2p PB91-176032, PAT-APPL-7-292 601

This Government-owned invention available for U.S. licensing and, possibly, for foreign licensing. Copy of patent available Commissioner of Patents, Washington, DC 20231 \$1.50.

Not available NTIS PB91-133827 National Inst. of Standards and Technology (NEL), Boulder, CO. Electromagnetic Technology Div. Current Supply for High-T(sub c) Superconductor Testing. Final rept.

S. L. Bray, and L. F. Goodrich. 1990, 4p Sponsored by Department of Energy, Washington, DC. Pub. in Meas. Sci. Technol. 1, p491-494 1990.

PB91-133983 Not available NTIS National Inst. of Standards and Technology (NEL), Boulder, CO. Electromagnetic Technology Div. Transport Critical Current of Aligned Polycrystalline Y1Ba2Cu3O7-delta and Evidence for a Nonweak-Linked Component of Intergranular Current Conduction. Final rept.

J. W. Ekin, H. R. Hart, and A. R. Gaddipati. 1990,

Sponsored by Department of Energy, Washington, DC., and Office of Naval Research, Arlington, VA Pub. in Jnl. of Applied Physics 68, n5 p2285-2295, 1 Sep 90.

PB91-134056 Not available NTIS National Inst. of Standards and Technology (NEL), Boulder, CO. Electromagnetic Technology Div. High T(sub c) Superconductors and the Critical Current Measurement.

Final rept. L. F. Goodrich, and S. L. Bray. 1990, 11p Pub. in Cryogenics 30, p667-677 Aug 90.

## **PHYSICS**

## Solid State Physics

PB91-134148 Not available NTIS National Inst. of Standards and Technology (NEL), Boulder, CO. Electromagnetic Technology Div Fundamental and Harmonic Susceptibilities of YBa2Cu3O7-delta. Final rept.

T. Ishida, and R. B. Goldfarb. 1990, 12p Sponsored by Ministry of Education, Science and Culture, Tokyo (Japan). Pub. in Physical Review B 41, n13 p8937-8948, 1 May

PB91-134254 Not available NTIS National Inst. of Standards and Technology (IMSE), Boulder, CO. Fracture and Deformation Div. Madelung Potentials and Valences Y1Ba2Cu3O7 Superconductor. the Valences in Final rept. H. Ledbetter, and M. Lei. 1990, 3p Pub. in Physica C 166, p483-485 1990.

Not available NTIS PB91-134262 National Inst. of Standards and Technology (IMSE), Boulder, CO. Fracture and Deformation Div. Elastic Constants, Debye Temperatures, and Electron-Phonon Parameters of Superconducting Cuprates and Related Oxides.

Final rept. H. Ledbetter, M. Lei, and S. Kim. 1990, 10p Pub. in Phase Transitions 23, p61-70 1990.

PB91-134270 Not available NTIS National Inst. of Standards and Technology (IMSE), Boulder, CO. Fracture and Deformation Div Elastic Constants of Polycrystalline Bi-Pb-Sr-Ca-Cu-O Superconductor. Final rept.

H. M. Ledbetter, S. A. Kim, R. B. Goldfarb, and K. Togano. 1989, 4p Pub. in Physical Review B 39, n13 p9689-9692, 1 May

PB91-134478 Not available NTIS National Inst. of Standards and Technology (NEL), Boulder, CO. Electromagnetic Technology Div.

Break Junction Tunnellng Spectroscopy of SingleCrystal Bismuth-Based High-Temperature Superconductors. Final rept.

J. Moreland, C. K. Chiang, and L. J. Swartzendruber.

Pub. in Advances in Cryogenic Engineering (Materials) 36, p619-625 1990.

PB91-134569 Not available NTIS National Inst. of Standards and Technology (NEL), Boulder, CO. Electromagnetic Technology Div Magnetization of Anisotropic Superconducting Grains

Final rept. R. L. Peterson. 1990, 4p Pub. in Jnl. of Applied Physics 67, n11 p6930-6933, 1 Jun 90.

PB91-134601 Not available NTIS National Bureau of Standards (IMSE), Gaithersburg, MD.

Calculation of Energy of Low-Angle Grain Boundaries.

Pub. in Philosophical Magazine A-Defects and Mechanical Properties 55, n4 p499-511 1987.

Not available NTIS National Inst. of Standards and Technology (MSEL), Gaithersburg, MD. Ceramics Div.

Phase Equilibria in the System TI-Ca-Ba-Cu-O. 1. Stability of the 2122 Phase under Conditions of Oxygen Annealing.

Final rept.
L. P. Cook, C. K. Chiang, W. Wong-Ng, L. J.
Swartzendruber, and L. H. Bennett. 1990, 4p
Pub. in Materials Research Society Symposia Proceedings, v169 p137-140 1990.

PB91-147397 Not available NTIS National Bureau of Standards (IMSE), Gaithersburg, MD. Ceramics Div. RIR - Measurement and Use in Quantitative XRD.

Final rept. C. R. Hubbard, and R. L. Snyder. 1988, 4p Pub. in Powder Diffraction 3, n2 p74-77 Jun 88.

Not available NTIS PB91-147603 National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Semiconductor Electronics Div. Phonon-Assisted Magneto-Donor Optical Transitions in n-InSb. Final rept.

C. L. Littler, W. Zawadzki, M. R. Loloee, X. N. Song, and D. G. Seiler. 1990, 3p Grant NSF-DMR86-17823

Sponsored by National Science Foundation, Washington, DC.

Pub. in Semicond. Sci. Technol. 5, n3S p169-171 Mar 90

PB91-147736 Not available NTIS National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Semiconductor Electronics Div.
Morphology and Barrier-Height Development of
Bi/InP(110) Interfaces. Final rept.

K. E. Miyano, T. Kendelewicz, R. Cao, C. J. Spindt, and I. Lindau. 1990, 7p Sponsored by Defense Advanced Research Projects

Agency, Arlington, VA., and Office of Naval Research, Arlington, VA.

Pub. in Physical Review B 42, n5 p3017-3023, 15 Aug

Not available NTIS PB91-147926 National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Precision Engineering Div.

Low Accelerating Voltage SEM Imaging and Metrology Using Backscattered Electrons. Final rept.

M. T. Postek. 1990, 5p Pub. in Review of Scientific Instruments 61, n12 p3750-3754 Dec 90.

PB91-148023 Not available NTIS National Inst. of Standards and Technology (MSEL), Gaithersburg, MD. Reactor Radiation Div. Crystal and Spin Structures of Nd2CuO4.

S. Skanthakumar, and J. W. Lynn. 1990, 3p Pub. in Physica C 170, p175-177 1990.

PB91-148064 Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Gas and Particulate Science Div. Secondary Ion Yield Changes in Silicon and Gallium Arsenide Due to Topography Changes during Oxygen or Cesium Ion Bombardment.

Final rept. F. Stevie, P. Kahora, D. Simons, and P. Chi. 1988,

Pub. in Jnl. of Vacuum Science and Technology A 6, n1 p76-80 1988.

Not available NTIS PB91-148155 National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Semiconductor Electronics Div. Strontium-Induced Oxygen Defect Structure and Hole Doping in La2-xSrxCuO4.

Final rept.

Z. Tan, M. E. Filipkowski, J. I. Budnick, E. K. Heller, D. L. Brewe, B. L. Chamberland, C. E. Bouldin, J. C. Woicik, and D. Shi. 1990, 4p Sponsored by Department of Energy, Washington, DC. Pub. in Physical Review Letters 64, n22 p2715-2718,

28 May 90.

PB91-148189 Not available NTIS National Inst. of Standards and Technology (NEL), Boulder, CO. Electromagnetic Technology Div Cryogenic Properties of Copper (Wall Chart). Final rept.

C. A. Thompson, W. M. Manganaro, and F. R. Fickett. 1990, 1p

PB91-148205 Not available NTIS National Inst. of Standards and Technology (IMSE), Gaithersburg, MD. Ceramics Div. Strength and Fracture Behavior of Ba-Y-Cu-O Superconducting Ceramics.

Final rept. J. S. Wallace, E. R. Fuller, A. S. Raynes, S. W. Freiman, J. E. Blendell, M. L. Balmer, and M. Hill. 1989, 13p

Pub. in Proceedings of International Symposium on High Temperature Superconducting Compounds: Processing and Related Properties, Las Vegas, NV., February 27-28, 1989, p597-609.

PB91-148916 Not available NTIS National Bureau of Standards (NEL), Gaithersburg, MD. Thermophysics Div. Theory of Specific Heat of Sollds.

Final rept.

A. P. Miiller, 1988, 89p

Pub. in Specific Heat of Solids, Chapter 1, p1-89 1988.

PB91-148932 Not available NTIS National Inst. of Standards and Technology (NEL), Boulder, CO. Electromagnetic Technology Div. Possible 'Proximity Matrix' Route to High Current Conductors. Final rept.

J. Moreland, Y. Li, J. W. Ekin, and L. F. Goodrich. 1990, 9p

Sponsored by Department of the Navy, Washington,

Pub. in Advances in Cryogenic Engineering (Materials), v36 ptA p413-421 1990.

Not available NTIS PB91-149294 National Inst. of Standards and Technology (NML), Boulder, CO. Quantum Physics Div. Study of the GaAs-Si(100) Interface Using Laser Probing of Thermal Desorption Kinetics. Final rept.

R. V. Smilgys, D. J. Oostra, and S. R. Leone. 1990,

Contract AFOSR87-0119 Sponsored by Air Force Office of Scientific Research, Bolling AFB, DC.

Pub. in Jnl. of Vacuum Science and Technology B 8, n5 p1102-1108 Sep/Oct 90.

Not available NTIS PB91-149328 National Bureau of Standards (NML), Gaithersburg, MD. Surface Science Div.

Epitaxial fcc Fe Films on Cu(100). Final rept.

D. A. Steigerwald, and W. F. Egelhoff. 1988, 1p Pub. in Physical Review Letters 60, n24 p2558, 13 Jun

## **Solid State Physics**

Not available NTIS National Bureau of Standards (NML), Gaithersburg, MD. Surface Science Div. Hall Effect.

Final rept. S. M. Girvin. 1987, 2p

See also N87-28431.
Pub. in McGraw-Hill Encyclopedia of Science and Technology, p296-297 1987.

PB91-149963 Not available NTIS National Inst. of Standards and Technology (NEL), Boulder, CO. Electromagnetic Technology Div. Analysis of the YBa2Cu3O7/SrTIO3 Interface as a Function of Post-Deposition Annealing Temperature.

Final rept. S. E. Asher, A. J. Nelson, A. R. Mason, A. B. Swartzlander, R. Dhere, L. Kazmerski, J. Halbritter, T. E. Harvey, J. A. Beall, and R. H. Ono. 1990, 7p Pub. in Proceedings of American Vacuum Society Fall Meeting, Boston, Ma., October 10-15, 1990, p205-211.

Not available NTIS PB91-149997 National Bureau of Standards (IMSE), Gaithersburg,

Emergence of Modern Nucleation Theory. Final rept.

J. W. Cahn. 1987, 15p Pub. in Materials Research Society Symposia Proceedings, v57 p41-55 1987.

PB91-150045 Not available NTIS National Bureau of Standards (IMSE), Gaithersburg, MD. Ceramics Div.

Amorphization and Conductivity of Silicon and Germanium induced by indentation.

Final rept.
D. R. Clarke, C. M. Kroll, P. D. Kirchner, R. F. Cook, and B. J. Hockey. 1988, 4p
Pub. in Physical Review Letters 60, n21 p2156-2159, 23 May 88.

PB91-158501 Not available NTIS National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Applied and Computational Mathe-

matics Div.

Micromagnetic Calculations of 180 deg Surface
Domain-Wall Magnetization Profiles with Compari-

son to Measurements.
Final rept.
J. L. Blue, and M. R. Scheinfein. 1990, 3p
See also PB91-107557. Sponsored by Office of Naval Research, Arlington, VA. Pub. in Jnl. of Applied Physics 68, n12 p6504-6506, 15 Dec 90.

PB91-158642 Not available NTIS National Bureau of Standards (NML), Gaithersburg, MD. Quantum Metrology Group.

X-ray Interferometry and gamma-ray Wave-

lengths.

Final rept. R. D. Deslattes. 1988, 16p. Pub. in Art of Measurement: Metrology in Fundamental and Applied Physics, p193-208 1988.

Not available NTIS PB91-159020 National Inst. of Standards and Technology (NML), Gaithersburg, MD. Gas and Particulate Science Div.

Modeling Electron Beam Interactions in Semiconductors.

Final rept. D. Newbury. 1989, 40p Pub. in SEM Microcharacterization of Semiconductors,

Chapter 2, p29-68 1989.

PB91-159053 Not available NTIS National Inst. of Standards and Technology (IMSE), Gaithersburg, MD. Ceramics Div.

Chemical Modification of the Orthorhombic Superconductor Ba2YCu3O7-delta. Final rept.

C. P. Ostertag, F. Beech, and E. R. Fuller. 1988, 10p Pub. in Ceramic Transactions 1, n2 p501-510 1988.

PB91-159129 Not available NTIS National Bureau of Standards (IMSE), Gaithersburg, MD. Reactor Radiation Div.

Phonon Density of States of Superconducting YBa2Cu3O7 and the Nonsuperconducting Analog

YBa2Cu3O6. Final rept.

J. J. Rhyne, D. A. Neumann, J. A. Gotaas, F. Beech, L. Toth, S. Lawrence, S. Wolf, M. Osofsky, and D. U. Gubser. 1987, 4p Pub. in Physical Review B 36, n4 p2294-2297, 1 Aug

PB91-159772 PC A05/MF A01

National Inst. of Standards and Technology (MSEL), Gaithersburg, MD. Reactor Radiation Div. NIST Reactor: Summary of Activities July 1989 through June 1990.

Technical note.
C. O'Connor. Dec 90, 90p NIST/TN-1285
Also available from Supt. of Docs. as SN003-003-03057-1. See also PB90-169996.

PB91-161935 Not available NTIS National Inst. of Standards and Technology (MSEL), Gaithersburg, MD. Reactor Radiation Div. Structural and Magnetic Properties of Er Thin Films and Er/Y Superlattices: Magnetoelastic Effects.

Final rept. J. A. Borchers, M. B. Salamon, R. W. Erwin, J. J. Rhyne, and R. R. Du. 1991, 14p Pub. in Physical Review B 43, n4 p3123-3136, 1 Feb

PB91-162172 Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Electron and Optical Physics Div. Uses of Spin-Polarised Electrons in Fundamental Electron-Atom Collision Processes and the Analysis of Magnetic Microstructures.

Final rept. M. H. Kelley. 1990, 18p

Sponsored by Department of Energy, Washington, DC Pub. in Australian Jnl. of Physics 43, p565-582 1990.

PB91-162305 Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Electron and Optical Physics Div. Micromagnetics of Domain Walls at Surfaces. Final rept.

M. R. Scheinfein, J. Unguris, J. L. Blue, K. J. Coakley, and D. T. Pierce. 1991, 28p Sponsored by Office of Naval Research, Arlington, VA. Pub. in Physical Review B 43, n4 p3395-3422, 1 Feb

Not available NTIS PB91-162313 National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Semiconductor Electronics Div. Narrow-Gap Semiconductors and Related Materials.

Final rept. D. G. Seiler, and C. L. Littler. 1990, 345p

See also AD-A223 534.
Pub. in Jnl. of Semiconductor Science and Technology 5, n5 pS1-S345 May 90.

Not available NTIS National Bureau of Standards (NML), Gaithersburg, MD. Radiation Physics Div.

Book Review: Polarized Electrons at Surfaces by J. Kirschner.

Final rept.

R. J. Celotta. 1986, 1p

Pub. in Applied Optics 25, n12 p1860, 15 Jun 86.

Not available NTIS PB91-174557 National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Robot Systems Div.

Development of a Three-Dimensional Finite Element Program for Large Strain Elastic-Plastic Solids.

Final rept.

J. H. Chiou, J. D. Lee, and A. G. Erdman. 1990, 15p Pub. in Computers and Structures 36, n4 p631-645 1990.

PB91-174698 Not available NTIS National Bureau of Standards (NML), Gaithersburg, MD. Surface Science Div.

XPS and Auger Forward Scattering in Epitaxial Films.

Final rept.

W. F. Egelhoff, 1987, 1p

Pub. in Physics Today, pS-69 Jan 87.

PB91-175232 Not available NTIS National Inst. of Standards and Technology (MSEL), Gaithersburg, MD. Reactor Radiation Div.

Models for Oxygen Ordering and Diffusion in Ba2YCu3Ox and Ba2YCu3-yMyOx (M = Fe, Co, AI, Ga).

Final rept.

A. Santoro. 1990, 4p

Pub. in Materials Research Society Symposia Proceedings, v169 p185-188 1990.

PB91-175323 Not available NTIS National Bureau of Standards (NML), Gaithersburg, MD. Radiation Physics Div.

Book Review: 'Polarized Electrons at Surfaces' by J. Kirschner.

Final rept.

D. T. Pierce. 1986, 1p

Pub. in Jnl. of the Optical Society of America B 3, n7 p1040 Jul 86.

PB91-175554 Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Surface Science Div.

Ion-Induced Radiation-Enhanced Diffusion of Silver in Nickel.

Final rept.

D. Marton, J. Fine, and G. P. Chambers. 1989, 5p Pub. in Materials Science and Engineering A115, p223-227 1989.

PB91-175612 Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Surface Science Div. Electron Attenuation Lengths at SiO2/Si Interfaces.

Final rept.

J. A. Yarmoff, S. A. Joyce, E. Cartier, and F. R. McFeely. 1990, 7p Pub. in Jnl. of Electron Spectroscopy and Related Phe-

nomena 52, p221-227 1990.

PC A23/MF A03 PB91-178822 National Inst. of Standards and Technology, Gaithersburg, MD.

## **Solid State Physics**

Chemistry of Electronic Ceramic Materials.

Final rept.

P. K. Davies, and R. S. Roth. Jan 91, 535p NIST/SP-804

Also available from Supt. of Docs. Prepared in cooperation with Pennsylvania Univ., Philadelphia. Sponsored by National Aeronautics and Space Administration, Washington, DC., Office of Naval Research, Arlington, VA., and Idaho National Engineering Lab., Idaho Falls.

Proceedings of the International Conference on the Chemistry of Electronic Ceramic Materials. Held in Jackson, Wyoming on August 17-22, 1990.

PB91-187294 Not available NTIS National Bureau of Standards (IMSE), Gaithersburg,

6-D Structural Model for the Icosahedral (Al, Si)-Mn Quasicrystal.

Final rept.

J. W. Cahn, D. Gratias, and B. Mozer. 1988, 9p Pub. in Jnl. of Physics 49, n7 p1225-1233 1988.

PB91-187344 Not available NTIS National Inst. of Standards and Technology (MSEL), Gaithersburg, MD. Ceramics Div.

Lead Zirconate-Titanate Thin Films Prepared by the Laser Ablation Technique.

Final rept.

C. K. Chiang, L. P. Cook, P. K. Schenck, P. S. Brody,

and J. M. Benedetto. 1990, 7p Pub. in Proceedings of Materials Research Society Symposium Ferroelectric Thin Films, San Francisco, CA., April 16-20, 1990, v200 p133-139.

Not available NTIS National Inst. of Standards and Technology (MSEL),

Gaithersburg, MD. Ceramics Div.
Levitation of Superconducting Composites. Final rept.

C. K. Chiang, M. Turchinskaya, L. J. Swartzendruber, R. D. Shull, and L. H. Bennett. 1990, 5p

Pub. in Proceedings of Advances in Materials Science and Applications of High Temperature Superconductors, Greenbelt, MD., April 2-6, 1990, p181-185.

PB91-187369 Not available NTIS National Inst. of Standards and Technology (MSEL),

Gaithersburg, MD, Ceramics Div.

Processing Bi-Pb-Sr-Ca-Cu-O Superconductors from Amorphous State.

Freiman, N. M. Hwang, M. Vaudin, M. D. Hill, R. D. Shull, A. J. Shapiro, L. J. Swartzendruber, and L. H.

Pub. in Proceedings of Advances in Materials Science and Applications of High Temperature Superconductors, Greenbelt, MD., April 2-6, 1990, p127-136.

PB91-187377 Not available NTIS National Inst. of Standards and Technology (IMSE), Gaithersburg, MD. Reactor Radiation Div.

Magnetic Ordering of Er in Powder and Single
Crystals of ErBa2Cu3O7.

Final rept.

T. W. Clinton, and J. W. Lynn. 1991, 4p Pub. in Physica C 174, p487-490 1991.

PB91-189258 Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Surface Science Div. X-ray Photoelectron Forward Scattering Studies of Surface Segregation in Epitaxial Cu-Ni-Ni(100)

Sandwich Structures. Final rept.

W. F. Egelhoff, 1989, 5p Pub. in Jnl. of Vacuum Science and Technology A 7, n3 p2060-2064 1989.

PB91-189506 Not available NTIS National Bureau of Standards (IMSE), Gaithersburg,

MD. Metallurgy Div.

Magnetic Hysteresis of High-Temperature
YBa2Cu3Ox-AgO Superconductors: Explanation of Magnetic Suspension.

Final rept.

C. Y. Huang, Y. Shapira, E. J. McNiff, P. N. Peters, B. B. Schwartz, M. K. Wu, R. D. Shull, and C. K. Chiang. 1988, 6p

Pub. in Modern Physics Letters B 2, n7 p869-874 Aug

PB91-189589 Not available NTIS National Bureau of Standards (IMSE), Gaithersburg, MD. Metallurgy Div.

Superconducting Thin Films of Bi-Sr-Ca-Cu-O Obtained by Laser Ablation Processing. Final rept.

B. F. Kim, J. S. Wallace, L. J. Swartzendruber, J. Bohandy, L. H. Bennett, F. J. Adrian, E. Agostinelli, W. J. Green, K. Moojani, R. D. Shull, and T. E. Phillips. 1988, 3p

Pub. in Applied Physics Letters 53, n4 p321-323 1988.

Not available NTIS PR91-189647 National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Chemical Process Metrology Div. Sputtered Thin Film YBa2Cu3On.

Final rept. K. G. Kreider, J. P. Cline, A. Shapiro, J. L. Pena, A.

Rojas, J. A. Azamar, L. Maldonado, and L. Del Castillo. 1988, 8p Pub. in Proceedings of Topical Conference on High Tc Superconducting Thin Films, Devices and Applications of the American Vacuum Society, Atlanta, GA., September 1988, p53-60.

PB91-189654 Not available NTIS National Inst. of Standards and Technology (IMSE), Gaithersburg, MD. Ceramics Div.

Dynamical Diffraction Imaging (Topography) with X-ray Synchrotron Radiation.

Final rept.

M. Kuriyama, R. C. Dobbyn, and B. W. Steiner. 1989,

Pub. in Annual Review of Materials Science 19, p183-207 1989

PB91-189662 Not available NTIS National Bureau of Standards (IMSE), Gaithersburg, MD. Ceramics Div.

Streaking Images That Appear Only in the Plane of Diffraction in Undoped GaAs Single Crystals: Diffraction Imaging (Topography) by Monochromatic Synchrotron Radiation.

Final rept. M. Kuriyama, U. Laor, D. Larson, R. C. Dobbyn, M. Brown, and B. Steiner. 1988, 7p

See also N88-30437.

Pub. in Physical Review B 38, n17 p2421-2427 1988.

PB91-189670 Not available NTIS National Bureau of Standards (NML), Gaithersburg, MD. Surface Science Div.

Initial Stages of Degradation of Superconductor Surfaces: O2, H2O, CO2 and CO Chemisorption on La2-xSrxCuO4.

Final rept. R. L. Kurtz, T. E. Madey, L. Toth, R. Stockbauer, A. Shih, and D. Mueller, 1988, 4p

Pub. in Physical Review B 37, n13 p7936-7939 1988.

Not available NTIS PB91-189688 National Inst. of Standards and Technology (NML), Gaithersburg, MD. Surface Science Div.

Electronic Structure of High-Tc Superconductors Studied Using Photoelectron Spectroscopy. Final rept.

R. L. Kurtz, S. W. Robey, R. L. Stockbauer, D. Mueller, A. Shih, L. Toth, A. K. Singh, and M. Osofsky. 1989, 5p Pub. in Vacuum 39, n7-8 p611-615 1989.

PB91-189787 Not available NTIS National Inst. of Standards and Technology (IMSE), Gaithersburg, MD. Reactor Radiation Div. Phonon Density of States and Superconductivity in Nd1.85Ce0.15CuO4. Final rept.

J. W. Lynn, I. W. Sumarlin, D. A. Neumann, J. J. Rush, J. L. Peng, and Z. Y. Li. 1991, 4p Pub. in Physical Review Letters 66, n7 p919-922, 18 Feb 91.

PB91-189928 Not available NTIS National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Precision Engineering Div. Microchannel-Plate Detection Systems for Low Accelerating Voltage SEM. Final rept.

M. T. Postek. 1991, 8p Pub. in Hitachi Instrument News, p3-10 Feb 91.

PB91-189969 Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Gas and Particulate Science Div. Fe Implantation in In0.53Ga0.47As/InP.

M. V. Rao, D. S. Simons, P. E. Thompson, N. R. Keshavarznia, J. M. Kuo, P. M. Amirtharaj, and T. Y. Chang. 1989, 5p

Pub. in Jnl. of Applied Physics 65, n2 p481-485 1989.

PB91-190090 Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Electron and Optical Physics Div. Geometric and Electronic Properties of Cs Structures on III-V (110) Surfaces: From 1D and 2D Insulators to 3D Metals.

Final rept. L. J. Whitman, J. A. Stroscio, R. A. Dragoset, and R. J. Celotta. 1991, 4p

Sponsored by Office of Naval Research, Arlington, VA. Pub. in Physical Review Letters 66, n10 p1338-1341, 11 Mar 91.

PB91-194662 Not available NTIS National Inst. of Standards and Technology (NEL), Boulder, CO. Electromagnetic Technology Div YBa2Cu3O7-delta/Insulator Multi-Laver Multi-Layers Crossover Fabrication. Final rept.

Johansson, and R. H. Ono. 1991, 4p Sponsored by Defense Advanced Research Projects Agency, Arlington, VA.

Pub. in IEEE (Institute of Electrical and Electronics Engineers) Transactions on Magnetics 27, n2 p1596-1599 Mar 91.

PB91-194704 Not available NTIS National Inst. of Standards and Technology (NEL), Boulder, CO. Electromagnetic Technology Div.

Anomalous Low-Frequency Butterfly Curves for Subsidiary and Ferromagnetic Resonance Overlap at 3 GHz.

Final rept. R. W. Cross, C. E. Patton, G. Srinivasan, J. G. Booth,

and M. Chen. 1991, 5p Contract USAF-F19628-85-0002

Sponsored by Rome Air Development Center, Griffiss AFB. NY.

Pub. in Jnl. of Applied Physics 69, n3 p1569-1573, 1

PB91-194738 Not available NTIS National Bureau of Standards (NML), Gaithersburg, MD. Radiation Physics Div.

Soft X-ray Absorption and Emission Spectra and the Electronic Structure of Some Exotic Materials.

D. L. Ederer, L. R. Canfield, T. A. Callcott, K. L. Tsang, C. H. Zhang, and E. T. Arakawa. 1988, 5p See also DE89001207.

Pub. in Proceedings of SPIE (Society of Photo-Optical Instrumentation Engineers) - X-ray Vac. Ultraviolet Interact. Data Bases, Calc., Meas., v911 p75-79 1988.

PB91-194753 Not available NTIS National Inst. of Standards and Technology (NEL), Boulder, CO. Electromagnetic Technology Div Current Record in Superconductors. Final rept.

J. W. Ekin, K. Salama, and V. Selvamanickam. 1991,

Sponsored by Office of Naval Research, Arlington, VA. Pub. in Nature 350, p26, 7 Mar 91.

PB91-194779 Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Electron and Optical Physics Div. System for the Study of Magnetic Materials and Magnetic Imaging with the Scanning Tunneling Microscope. Final rept.

Pinal rept.
P. N. First, J. A. Stroscio, D. T. Pierce, R. A.
Dragoset, and R. J. Celotta. 1991, 6p
Sponsored by Office of Naval Research, Arlington, VA.
Pub. in Jnl. of Vacuum Science and Technology B 9,

n2 p531-536 Mar/Apr 91.

PB91-194860 Not available NTIS National Inst. of Standards and Technology (MSEL), Boulder, CO. Fracture and Deformation Div.

Group and Phase Sound Velocities in an Eu1Ba2Cu3O7 Superconductor and Related Perovskite Oxides. Final rept.

H. Ledbetter, C. M. Fortunko, and S. Lin. 1990, 5p Pub. in Proceedings of Ultrasonics Symposium, Hono-lulu, Hl., December 4-7, 1990, p1215-1219.

Not available NTIS PR91-194894 National Bureau of Standards (IMSE), Gaithersburg, MD. Reactor Radiation Div.

Long-Range Antiferromagnetic Order of the Cu in Oxygen Deficient RBa2Cu3O6 + x. Final rept.

W. H. Li, J. W. Lynn, H. A. Mook, B. C. Sales, and Z. Fisk. 1988, 4p Pub. in Physical Review B 37, n16 p9844-9847 1988.

Not available NTIS PB91-194902 National Inst. of Standards and Technology (IMSE), Gaithersburg, MD. Reactor Radiation Div.

Crystal-Field Splittings in the Cubic Heusler Alloys HoPd2Sn and ErPd2Sn.

Final rept. W. H. Li, J. W. Lynn, H. B. Stanley, T. J. Udovic, R. N. Shelton, and P. Klavins. 1989, 8p Pub. in Physical Review B 39, n7 p4119-4126, 1 Mar

PB91-194977 Not available NTIS National Inst. of Standards and Technology (IMSE),

Gaithersburg, MD. Ceramics Div.
Studles of Magnetic Flux Penetration in a Chemically Synthesized Bi(Pb)SrCaCuO Superconductor.

Final rept. D. Lundy, J. Ritter, L. Swartzendruber, R. Shull, and L. Bennett. 1989, 7p

Pub. in Jnl. of Superconductivity 2, n2 p273-279 Jun

PB91-195024 Not available NTIS National Inst. of Standards and Technology (CSTL), Gaithersburg, MD. Surface and Microanalysis Science

Ion Bombardment Induced Diffusion: A Case Study on a Sputtered Ag/Ni Layered System. Final rept.

D. Marton, and J. Fine. 1990, 19p Pub. in Periodica Polytechnica 34, n1-3 p37-55 1990.

PB91-195115 Not available NTIS National Bureau of Standards (IMSE), Gaithersburg, MD. Metallurgy Div.
Wigner-Seitz Local-Environment Study of the High

Tc Superconductors.

Final rept. M. Melamud, L. H. Bennett, and R. E. Watson, 1988,

8p Pub. in Physical Review B 38, n7 p4624-4631 1988.

PB91-195461 Not available NTIS National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Precision Engineering Div. SEM Imaging and Metrology at Low Accelerating Voltages Using Backscattered Electrons.

Wolfages of Standard Test 2100 (100).

M. T. Postek. 1990, 1p
Pub. in Proceedings of Scanning '91, Atlantic City, NJ.,
April 8-12, 1991, pl-21 1990.

PB91-195552 Not available NTIS National Bureau of Standards (NEL), Gaithersburg, MD. Chemical Process Metrology Div.
Comparison of Amorphous and Quasicrystalline

Films of Sputtered Al0.72Mn0.22Si0.06. Final rept. J. L. Robertson, S. C. Moss, and K. G. Kreider. 1988,

Pub. in Physical Review Letters 60, n20 p2062-2065 1988

PB91-195560 Not available NTIS National Inst. of Standards and Technology (IMSE), Gaithersburg, MD. Ceramics Div.

Inverse Correlation between the Intensity of Lumi-

nescence Excited by Electrons and by Visible Light in Chemical-Vapor-Deposited Diamond Films

Final rept.

L. H. Robins, E. N. Farabaugh, A. Feldman, and L. P. Cook. 1991, 6p Pub. in Physical Review B 43, n11 p9102-9107, 15 Apr

Not available NTIS PB91-195578 National Bureau of Standards (IMSE), Gaithersburg, MD. Ceramics Div.

Optically Detected Magnetic Resonance Study of Antisite-to-Acceptor and Related Recombination Processes in as-Grown InP-Zn.

Final rept. H. Robins, T. A. Kennedy, and P. C. Taylor. 1988,

Pub. in Physical Review B 38, n18 p3227-3236 1988.

PB91-195586 Not available NTIS National Inst. of Standards and Technology (IMSE), Gaithersburg, MD. Ceramics Div.
Photoluminescence Excitation by Band-Gap Opti-

cal Absorption in Chemical Vapor Deposition Diamond Films.

Final rept. L. H. Robins, P. J. H. Tjossem, K. C. Smyth, P. Y. Barnes, E. N. Farabaugh, and A. Feldman. 1991, 7p Pub. in Jnl. of Applied Physics 69, n6 p3702-3708, 15 Mar 91.

Not available NTIS National Inst. of Standards and Technology (NEL), Boulder, CO. Electromagnetic Technology Div.

Morphology of Silver on YBa2Cu3O7-delta Thin Films.

Final rept.

A. Roshko, R. H. Ono, J. A. Beall, J. Moreland, A. J. Nelson, and S. Asher. 1991, 3p

Pub. in IEEE (Institute of Electrical and Electronics Engineers) Transactions on Magnetics 27, n2 p1616-1618 Mar 91.

PB91-195677 Not available NTIS National Bureau of Standards (IMSE), Gaithersburg, MD. Ceramics Div.

Parent Structure of the Layered High-Temperature Superconductors.

Final rept.

T. Siegrist, S. M. Zahurak, D. W. Murphy, and R. S. Roth. 1988, 2p

Pub. in Nature 334, n6179 p231-232 1988.

PR91-195743 Not available NTIS National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Mathematical Analysis Div.

Effect of an Electric Field on the Morphological Stability of the Crystal-Melt Interface of a Binary Alloy. 3. Weakly Nonlinear Theory. Final rept.

A. A. Wheeler, G. B. McFadden, S. R. Coriell, and D. T. J. Hurle. 1990, 11p See also PB90-193541.

Pub. in Jnl. of Crystal Growth 100, n1-2 p78-88 Feb 90.

Not available NTIS PB91-195750 National Inst. of Standards and Technology (NML), Gaithersburg, MD. Electron and Optical Physics Div. Scanning Tunneling Microscopy Study of Clean and Cs-Covered InSb(110). Final rept.

L. J. Whitman, J. A. Stroscio, R. A. Dragoset, and R. J. Celotta, 1991, 5p

Sponsored by Office of Naval Research, Arlington, VA. Pub. in Jnl. of Vacuum Science and Technology B 9, n2 p770-774 Mar/Apr 91.

PB91-200865 Not available NTIS National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Mathematical Analysis Div.

Numerical Study of Two-Dimensional Crystal Growth Forms in the Presence of Anisotropic Growth Kinetics. Final rept.

L. N. Brush, and R. F. Sekerka, 1989, 23p.

Sponsored by Carnegie-Mellon Univ., Pittsburgh, PA. Pub. in Jnl. of Crystal Growth, p419-441 1989.

Not available NTIS PB91-203117 National Inst. of Standards and Technology (NEL), Boulder, CO. Electromagnetic Technology Div. Switching in High-Tc Superconductor Current Transport Measurements.

Final rept. L. F. Goodrich, J. Moreland, and A. Roshko. 1991,

Pub. in IEEE (Institute of Electrical and Electronics En-

gineers) Transactions on Magnetics 27, n2 p1194-1197 Mar 91.

PB91-203539 Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Surface Science Div.

Core Hole Screening for Intermediate Size Metal Particles. Final rept.

J. A. D. Matthew. 1990, 5p

Pub. in Solid State Communication 73, n2 p179-183

## **PHYSICS**

## Solid State Physics

PB91-203554 Not available NTIS National Bureau of Standards (NEL), Gaithersburg, MD. Semiconductor Electronics Div.

Lattice Relaxation in Silicon Doped with 4d- and 5d-Transition Metals.

Final rept.

S. Mayo, and J. R. Lowney. 1988, 6p

Pub. in Jnl. of Applied Physics 64, n9 p4538-4543

PB91-203596 Not available NTIS National Bureau of Standards (NML), Gaithersburg, MD. Surface Science Div.

Method of FIM-FEEM Specimen Preparation of Superconducting and Other Oxides. Final rept.

A. J. Melmed. 1988, 5p Pub. in Jnl. of Physics C6, p67-71 1988.

PB91-203604 Not available NTIS National Bureau of Standards (NML), Gaithersburg, MD. Surface Science Div.
Progress in Field Ion Microscopy Imaging of High-

Tc Superconducting Oxides.

Final rept.

A. J. Melmed, R. D. Shull, and C. K. Chiang. 1988,

Pub. in Jnl. of Physics C6, p459-464 1988.

PB91-203612 Not available NTIS National Bureau of Standards (NML), Gaithersburg, MD. Surface Science Div.

Atomic Fingerprint of YBa2Cu3O7-x-Type High-Temperature Superconductors Observed by Field Ion Microscopy.

Final rept.

A. J. Melmed, R. D. Shull, C. K. Chiang, and H. A. Fowler. 1988, 6p

Pub. in Materials Science and Engineering 100, pL27-L32 Apr 88.

PB91-203646 Not available NTIS National Inst. of Standards and Technology (NEL), Boulder, CO. Electromagnetic Technology Div. Prospects for High Temperature Superconductor - Semiconductor Contacts.

Final rept. J. Moreland, J. W. Ekin, and T. Larson. 1991, 7p Contract DE-Al05-89ER14044

Sponsored by Department of Energy, Washington, DC. Pub. in Proceedings of ASM International Electronic Materials and Processing Congress (3rd), San Francisco, CA., August 20-23, 1990, p195-201 1991.

PB91-203653 Not available NTIS National Inst. of Standards and Technology (NEL), Boulder, CO. Electromagnetic Technology Div.
Tunneling Stabilized Magnetic Force Microscopy:
Prospects for Low Temperature Applications to Superconductors.

Final rept. J. Moreland, and P. Rice. 1991, 4p

Pub. in IEEE (Institute for Electrical and Electronics Engineers) Transactions on Magnetics 27, n2 p1198-1201 Mar 91.

Not available NTIS PB91-203950 National Inst. of Standards and Technology (NEL), Boulder, CO. Electromagnetic Technology Div.
Properties of YBa2Cu3O7-delta Thin Films Grown on Off-Axis-Cut MgO Substrates. Final rept.

S. E. Russek, B. Jeanneret, D. A. Rudman, and J. W. Ekin. 1991, 4p

Pub. in IEEE (Institute of Electrical and Electronics Engineers) Transactions on Magnetics 27, n2 p931-934 Mar 91. PB91-216747

(Order as PB91-216705, PC A07/MF A01) National Inst. of Standards and Technology, Gaithersburg, MD.

High Resolution Synchrotron X-Radiation Diffraction Imaging of Crystals Grown in Microgravity and Closely Related Terrestrial Crystals.

B. Steiner, R. C. Dobbyn, D. Black, H. Burdette, and M. Kuriyama. 1991, 27p

Prepared in cooperation with EG and G Energy Measurements, Inc., Goleta, CA., National Aeronautics and Space Administration, Hampton, VA. Langley Research Center, Alabama A and M Univ., Huntsville, and GTE Labs., Inc., Waltham, MA.
Included in Jnl. of Research of the National Institute of

Standards and Technology, v96 n3 p305-331 May/Jun

PB91-236729 Not available NTIS National Inst. of Standards and Technology (EEEL), Gaithersburg, MD. Semiconductor Electronics Div. Testing the Accuracy of Calculated Equilibrium Carrier Concentrations in the Presence of Surface Fields.

Final rept. J. Geist, J. R. Lowney, C. R. James, and A. M. Robinson. 1991, 7p Pub. in Jnl. of Applied Physics 70, n1 p236-242, 1 Jul

PB91-236968 Not available NTIS National Inst. of Standards and Technology (EEEL), Gaithersburg, MD. Semiconductor Electronics Div. Majority and Minority Electron and Hole Mobilities in Heavily Doped GaAs. Final rept.

J. R. Lowney, and H. S. Bennett. 1991, 9p Pub. in Jnl. of Applied Physics 69, n10 p7102-7110, 15 May 91.

Not available NTIS PR91-237180 National Inst. of Standards and Technology (NEL), Boulder, CO. Electromagnetic Technology Div Critical-Current Diffraction Patterns of Grain-Boundary Josephson Weak Links. Final rept.

R. L. Peterson, and J. W. Ekin. 1990, 5p Pub. in Physical Review B 42, n13 p8014-8018, 1 Nov

PB91-237263 Not available NTIS National Inst. of Standards and Technology (MSEL), Gaithersburg, MD. Ceramics Div.

Surface Extended-X-ray-Absorption Fine Structure and Scanning Tunneling Microscopy of Si(001)2x1-Sb. Final rept.

M. Richter, J. C. Woicik, J. Nogami, P. Pianetta, K. E. Miyano, A. A. Baski, T. Kendelewicz, C. E. Bouldin, W. E. Spicer, C. F. Quate, and I. Lindau. 1990, 4p Contract N00014-90-J-1001

Sponsored by Office of Naval Research, Arlington, VA. Pub. in Physical Review Letters 65, n27 p3417-3420, 31 Dec 90.

Not available NTIS PB91-237271 National Inst. of Standards and Technology (CAML), Gaithersburg, MD. Applied and Computational Mathematics Div.

Micromagnetic Calculations of 180 deg Surface Domain Walls.

Final rept. M. R. Scheinfein, and J. L. Blue. 1991, 12p See also PB91-158501

Pub. in Jnl. of Applied Physics 69, n11 p7740-7751, 1

PB91-237289 Not available NTIS National Inst. of Standards and Technology (PL), Gaithersburg, MD. Electron and Optical Physics Div. Scanning Electron Microscopy with Polarization Analysis (SEMPA)-Studies of Domains, Domain Walls and Magnetic Singularities at Surfaces and in Thin Films.

Final rept. M. R. Scheinfein, J. Unguris, M. Aeschlimann, D. T. Pierce, and R. J. Celotta. 1991, 7p

See also PB91-112672. Sponsored by Office of Naval Research, Arlington, VA.

Pub. in Jnl. of Magnetism and Magnetic Materials 93, p109-115 1991.

PB91-237420 Not available NTIS National Bureau of Standards (NML), Gaithersburg,

MD. Surface Science Div.
Structural Study of the Epitaxial Growth of fcc-Fe
Films, Sandwiches, and Superlattices on Cu(100). Final rept.

D. A. Steigerwald, I. Jacob, and W. F. Egelhoff. 1988, 21p

Pub. in Surface Science 202, n3 p472-492 1988.

PB91-237438 Not available NTIS National Inst. of Standards and Technology (IMSE), Gaithersburg, MD. Ceramics Div.

Structural Anomalies in Undoped Gallium Arsenide Observed in High Resolution Diffraction Imaging with Monochromatic Synchrotron Radiation. Final rept.

B. Steiner, M. Brown, R. C. Dobbyn, M. Kuriyama, U. Laor, and Larson. 1989, 10p See also N89-11595.

Pub. in Jnl. of Applied Physics 66, n2 p559-568 1989.

PB91-237453 Not available NTIS National Inst. of Standards and Technology (CSTL), Gaithersburg, MD. Surface and Microanalysis Science

Theory of Ballistic-Electron-Emission Spectrosco-py of NiSi2/Si(111) Interfaces. Final rept.

M. D. Stiles, and D. R. Hamann. 1991, 4p Pub. in Physical Review Letters 66, n24 p3179-3182, 17 Jun 91.

PB91-237545 Not available NTIS National Bureau of Standards (IMSE), Gaithersburg,

MD. Metallurgy Div.
Mossbauer Study of the Effect of Oxygen Stoichiometry on the High Tc Superconductor Y1Ba2(CuO.97Fe0.03)3O7-x.

Final rept. L. J. Swartzendruber, L. H. Bennett, M. Z. Harford, and M. Rubinstein. 1988, 12p

Pub. in Jnl. of Superconductivity 1, n2 p219-230 1988.

Not available NTIS PB91-237552 Not available NTIS National Inst. of Standards and Technology (MSEL), Gaithersburg, MD. Metallurgy Div.

Low-Field Flux Pinning in Twinned and Detwinned Single Crystals of YBa2Cu3O7-x.

Final rept.

L. J. Swartzendruber, D. L. Kaiser, F. W. Gayle, L. H. Bennett, and A. Roytburd. 1991, 3p

Pub. in Applied Physics Letters 58, n14 p1566-1568, 8 Apr 91.

PB91-240820 PC A04/MF A01 National Inst. of Standards and Technology (NML), Gaithersburg, MD. Surface Science Div. Technical Activities 1990 Surface Science Division. C. J. Powell. May 91, 57p NISTIR-4643 See also PB90-161985.

PC A03/MF A01 PB92-108877 National Inst. of Standards and Technology (MSEL), Gaithersburg, MD. Reactor Radiation Div.

## Solid State Physics

NIST\*LATTICE: A Program to Analyze Lattice Relationships. Spring 1991 Version. Technical note (Final).

V. L. Karen, and A. D. Mighell. Sep 91, 41p NIST/ TN-1290

Also available from Supt. of Docs. as SN003-003-03106-2. See also PB86-166774.

PB92-109008 PC A08/MF A02 National Inst. of Standards and Technology (MSEL), Gaithersburg, MD.
High Resolution Diffraction Imaging of Crystals

Grown in Microgravity and Closely Related Terrestrial Crystals.
Technical note (Final).

B. Steiner, R. Dobbyn, D. Black, H. Burdette, M. Kuriyama, R. Spal, L. van den Berg, A. Fripp, R.

Simchick, R. Lal, A. Batra, D. Mattiesen, and B. Ditchek. Aug 91, 165p NIST/TN-1287
Ditchek. Aug 91, 165p NIST/TN-1287
Oso available from Supt. of Docs. as SN003-003-03092-9. Sponsored by National Aeronautics and Space Administration, Washington, DC. Microgravity Science and Applications Div.

PB92-112333 PC A05/MF A02 National Inst. of Standards and Technology (MSEL), Boulder, CO. Materials Reliability Div.

Oxides and Oxide Superconductors: Elastic and Related Properties.

M. Lei, and H. Ledbetter. Aug 91, 100p NISTIR-3980

PB92-116565 Not available NTIS National Inst. of Standards and Technology (MSEL), Gaithersburg, MD. Reactor Radiation Div.

Theoretical Model for the Tunneling-Gap Anisotro-

py Observed in Layered Copper-Oxide High-Temperature Superconductors.

Final rept.

R. C. Casella. 1991, 3p Pub. in Solid State Communications 78, n5 p377-379

PB92-116631 Not available NTIS National Inst. of Standards and Technology (CSTL), Gaithersburg, MD. Surface and Microanalysis Science Div.

Magnetic Anisotropies in Ultrathin fcc Fe(001) Films Grown on Cu(001) Substrates. Final rept.

J. F. Cochran, W. B. Muir, J. M. Rudd, B. Heinrich, Z. Celinski, T. T. Le-Tran, W. Schwarzacher, W. Sennett, and W. F. Egelhoff. 1991, 3p Sponsored by Natural Sciences and Engineering Research Council of Canada, Ottawa (Ontario). Pub. in Jnl. of Applied Physics 69, n8 p5206-5208, 15

Not available NTIS PB92-116680 National Bureau of Standards (NEL), Boulder, CO. Electromagnetic Technology Div.

Single-Target Magnetron Sputter-Deposition of High-Tc Superconducting Bi-Sr-Ca-Cu-O Thin Films.

Final rept. N. G. Dhere, J. P. Goral, A. R. Mason, R. G. Dhere,

and R. H. Ono. 1988, 3p Pub. in Jnl. of Applied Physics 64, n10 p5259-5261, 15 Nov 88.

Not available NTIS PB92-116730 National Bureau of Standards (NML), Gaithersburg, MD. Surface Science Div.

Interpretation of Field Ion Microscopy (FIM)
Images of Asymmetrical Specimens of 1,2,3-Type High-Tc Superconductors.

Final rept. H. B. Elswijk, H. A. Fowler, and A. J. Melmed. 1988,

Pub. in Jnl. de Physique 49, nC-6 p489-493 1988.

PB92-117316 Not available NTIS National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Semiconductor Electronics Div. Intrinsic Carrier Concentrations in Long Wavelength HgCdTe Based on the New, Nonlinear Temperature Dependence of Eg(x,T).

Final rept.

D. G. Seiler, J. R. Lowney, C. L. Littler, and I. T. Yoon. 1991, 5p

Pub. in Materials Research Society Symposia Proceedings, v216 p59-63 1991.

PB92-117340 Not available NTIS National Inst. of Standards and Technology (MSEL), Gaithersburg, MD. Reactor Radiation Div. Antiferromagnetic Order of Cu in Sm2CuO4. Final rept.

S. Skanthakumar, J. W. Lynn, J. L. Peng, and Z. Y. Li. 1991, 3p

Pub. in Jnl. of Applied Physics 69, n8 p4866-4868, 15

PB92-117373 Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Electron and Optical Physics Div. Kinematic Theory of Ballistic Electron Emission Spectroscopy of Silicon-Silicide Interfaces. Final rept

M. D. Stiles, and D. R. Hamann, 1991, 5p Pub. in Jnl. of Vacuum Science and Technology B 9, n4 p2394-2398 Jul/Aug 91.

PB92-117381 Not available NTIS National Inst. of Standards and Technology (IMSE), Gaithersburg, MD.

Theory of Orientation Textures Due to Surface **Energy Anisotropies.** 

Final rept.

J. E. Taylor, and J. W. Cahn. 1988, 3p Pub. in Jnl. of Electronic Materials 17, n5 p443-445

PB92-117415 Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Electron and Optical Physics Div. Observation of Two Different Oscillation Periods in the Exchange Coupling of Fe/Cr/Fe(100). Final rept.

J. Unguris, R. J. Celotta, and D. T. Pierce. 1991, 4p Pub. in Physical Review Letters 67, n1 p140-143, 1 Jul

PB92-117464 Not available NTIS National Inst. of Standards and Technology (MSEL), Gaithersburg, MD. Reactor Radiation Div.

Low Temperature Magnetization and Magnetic Excitations in Amorphous Fe78B13Si9. Final rept.

S. C. Yu, J. W. Lynn, J. J. Rhyne, and G. E. Fish. 1991, 5p

Pub. in Jnl. of Magnetism and Magnetic Materials 97, p286-290 1991.

#### Structural Mechanics

PC A09/MF A01 National Inst. of Standards and Technology (MSEL), Boulder, CO. Materials Reliability Div.

Study of Static and Dynamic Fracture Using Strain Measurements.

J. R. Berger, and J. W. Dally. Sep 90, 188p NISTIR-

PB91-147033 Not available NTIS National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Applied and Computational Mathematics Div.

Mechanism for High Strain-Rate Shear Band Formation.

Final rept.

T. J. Burns. 1990, 4p

Pub. in Shock Compression of Condensed Matter 1989, p345-348 1990.

PB91-147256 Not available NTIS National Inst. of Standards and Technology (MSEL), Boulder, CO. Fracture and Deformation Div. Experimental and Numerical Studies of the J-Integral for a Surface Flaw. Final rept.

R. H. Dodds, and D. T. Read. 1990, 21p. Sponsored by David Taylor Research Center, Bethesda. MD

Pub. in International Jnl. of Fracture 43, p47-67 1990.

PB91-147371 Not available NTIS National Inst. of Standards and Technology (IMSE), Boulder, CO. Fracture and Deformation Div. Stress Intensity Factors by Enriched Mixed Finite Elements. Final rept.

P. R. Heyliger, and R. D. Kriz. 1989, 13p Pub. in International Jnl. for Numerical Methods in Engineering 28, p1461-1473 1989.

PB91-149211 Not available NTIS National Inst. of Standards and Technology (NML), Boulder, CO. Quantum Physics Div. Thermal Noise In Mechanical Experiments.

Final rept.

P. R. Saulson. 1990, 9p Pub. in Physical Review D 42, n8 p2437-2445, 15 Oct 90

PB91-149872 Not available NTIS National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Applied and Computational Mathematics Div.

Mechanism for Shear Band Formation in the High Strain-Rate Torsion Test.

Final rept.

T. J. Burns. 1990, 9p See also PB89-215370.

Pub. in Transactions of the ASME 57, p836-844 Dec

PB91-174268 Not available NTIS National Inst. of Standards and Technology (IMSE), Boulder, CO. Fracture and Deformation Div. Determining the Dynamic Stress Intensity Factor with Strain Gages Using a Crack Tip Locating Algo-

rithm. Final rept.

J. R. Berger, J. W. Dally, and R. J. Sanford. 1990,

Sponsored by National Science Foundation, Washing-

ton, DC Pub. in Engineering Fracture Mechanics 36, n1 p145-156 1990

Not available NTIS PB91-174433 National Inst. of Standards and Technology (IMSE), Boulder, CO. Fracture and Deformation Div.

## **PHYSICS**

## **Structural Mechanics**

Improved Optical Diffraction Strain Measurement System.

Final rept.

J. R. Berger, and R. D. Kriz. 1989, 7p

Pub. in Proceedings of SEM Spring Conference on Experimental Mechanics, Cambridge, MA., May 29-June 1, 1989, p572-578.

PB91-174599 Not available NTIS National Inst. of Standards and Technology (IMSE), Boulder, CO. Fracture and Deformation Div. Use of Birefringent Coatings in Fracture Mechanics.

Final rept.

J. W. Dally, J. R. Berger, and K. C. Ham. 1989, 8p Grant NSF-MSM85-13037

Sponsored by National Science Foundation, Washington, DC.

Pub. in Proceedings of SEM Spring Conference on Experimental Mechanics, Cambridge, MA., May 29-June 1, 1989, p513-520.

PB91-175208 Not available NTIS National Inst. of Standards and Technology (IMSE), Boulder, CO. Fracture and Deformation Div Computerization of a Thermomechanical Processing Research System.

Final rept.

Y. Rosenthal, and Y. W. Cheng. 1989, 31p Pub. in Intelligent Instruments and Computers, p58-88 Mar/Apr 89.

Not available NTIS PB91-175224 National Bureau of Standards (NEL), Gaithersburg, MD. Structures Div.

Extended Abstract: A Finite Element Study of the Stress and Displacement Fields Produced by Point Impact.

Final rept.

M. Sansalone, N. J. Carino, and N. N. Hsu. 1986, 4p Pub. in Jnl. of Acoustic Emission 5, n1 pS24-S27 Jan-Mar 86.

Not available NTIS PB91-202812 National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Mathematical Analysis Div Identification of Dynamic Green's Functions in Structural Networks. Final rept.

A. S. Carasso, and E. Simiu. 1989, 8p

Sponsored by Air Force Office of Scientific Research, Bolling AFB, DC., and Directorate of Aerospace Studies, Kirtland AFB, NM.

Pub. in AIAA (American Institute of Aeronautics and Astronautics) Jnl. 27, n4 p492-499 Apr 89.

Not available NTIS PB91-236794 National Inst. of Standards and Technology (IMSE), Gaithersburg, MD. Fracture and Deformation Div Resonating-Orthotropic-Cube Method for Elastic Constants. Final rept.

P. Heyliger, H. Ledbetter, and M. Austin. 1990, 10p Pub. in Dynamic Elastic Modulus Measurements in Materials, ASTM STP 1045, p100-109 1990.

PB91-237354 Not available NTIS National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Structures Div.
Impulse Response Functions for Elastic Structures with Rigid Body Degrees of Freedom.

Final rept. E. Simiu, and G. Cook. 1989, 14p

Sponsored by Air Force Office of Scientific Research, Bolling AFB, DC.

Pub. in Jnl. of Sound and Vibration 135, p275-288, 8 Dec 89.

PB92-116573

Not available NTIS National Inst. of Standards and Technology (MSEL), Gaithersburg, MD. Polymers Div.

**Buckling and Post-Buckling Behavior of Elliptical** Plates: Part 1. Analysis.

Final rept.

H. Chai. 1990, 8p

See also Part 2, PB92-116581.

Pub. in Jnl. of Applied Mechanics 57, p981-988 Dec

PB92-116581 Not available NTIS National Inst. of Standards and Technology (MSEL), Gaithersburg, MD. Polymers Div.

**Buckling and Post-Buckling Behavior of Elliptical** Plates. Part 2. Results.

Final rept.

H. Chai. 1990, 6p

See also Part 1, PB92-116573.

Pub. in Jnl. of Applied Mechanics 112, p989-994 Dec

PB92-126622

(Order as PB92-126614, PC A06/MF A02) National Inst. of Standards and Technology, Gaithersburg, MD.

Summary of the Intercomparison of the Force Standard Machines of the National Institute of Standards and Technology, USA, and the Physikalisch-Technische Bundesanstalt, Germany.

S. L. Yaniv, A. Sawla, and M. Peters. 1991, 12p Prepared in cooperation with Physikalisch-Technische Bundesanstalt, Brunswick (Germany, F.R.). Included in Jnl. of Research of the National Institute of Standards and Technology, v96 n5 p529-540 Sep/Oct

Energy Levels of Atomic Aluminum with Hyperfine Structure.

Quarterly rept.

E. S. Chang. c1990, 7p Contract DNA-001-85-C-0022

Sponsored by Defense Nuclear Agency, Washington,

Included in Jnl. of Physical and Chemical Reference Data, v19 n1 p119-126 1990. Available from American Chemical Society, 1155 16th St., NW, Washington, DC 20036.

PB90-244583

(Order as PB90-244526)

Japan Atomic Energy Research Inst., Tokai. Spectral Data and Grotrian Diagrams for Highly Ionized Iron, Fe VIII-XXVI.

Quarterly rept.

Codaterly lepton.

T. Shirai, Y. Funatake, K. Mori, J. Sugar, W. L. Wiese, and Y. Nakai. c1990, 149p

Sponsored by Department of Energy, Washington, DC. Prepared in cooperation with Hiroshima-Denki Inst. of Tech. (Japan), and National Inst. of Standards and Technology, Gaithersburg, MD.

Included in Jnl. of Physical and Chemical Reference Data, v19 n1 p127-276 1990. Available from American Chemical Society, 115 16th St., NW, Washington, DC

PB90-244666

(Order as PB90-244658)

National Inst. of Standards and Technology (NML), Gaithersburg, MD. Center for Atomic, Molecular and Optical Physics.

Energy Levels of Copper, Cu I through Cu XXIX.

Quarterly rept.

J. Sugar, and A. Musgrove. c1990, 90p

Included in Jnl of Physical and Chemical Reference Data, v19 n3 p527-616 1990. Available from American Chemical Society, 1155 16th St., NW, Washington, DC 20036.

General

PC A03/MF A01 AD-A227 806/7 National Inst. of Standards and Technology (NML),

Boulder, CO. Time and Frequency Div. Cooled Ion Frequency Standard. Annual rept. 1 Oct 89-31 Sep 90.

D. J. Wineland. 15 Sep 90, 17p Contract N00014-90-F-0004

PC A02/MF A01 AD-A242 029/7 National Inst. of Standards and Technology, Boulder, CO.

Liquid and Solid Ion Plasmas. Annual rept. 1 Oct 90-31 Sep 91.

D. J. Wineland, and J. J. Bollinger. 15 Sep 91, 8p Contract N00014-89-F-0020

AD-A242 030/5 PC A02/MF A01 National Inst. of Standards and Technology, Boulder, CO.

Cooled Ion Frequency Standard. Annual rept. 1 Oct 90-31 Sep 91. D. J. Wineland. 15 Sep 91, 8p Contract N00014-90-F-0004

PB90-244575

(Order as PB90-244526)

Massachusetts Univ., Amherst. Dept. of Physics and Astronomy.

PB90-244690

(Order as PB90-244658)

Joint Inst. for Lab. Astrophysics, Boulder, CO.

Cross Sections and Swarm Coefficients for H+,  $\rm H2+, H3+, H, H2, and H-in H2$  for Energies from 0.1 eV to 10 keV.

Quarterly rept.

A. V. Phelps. c1990, 23p

Included in Jnl. of Physical and Chemical Reference Data, v19 n3 p653-673 1990. Available from American Chemical Society, 1155 16th St., NW, Washington, DC 20036

PC A04/MF A01 PB91-132290 National Inst. of Standards and Technology (NML), Gaithersburg, MD. Center for Radiation Research. Absorbed-Dose Calibration of Ionization Chambers in a (60) Co Gamma-Ray Beam.

Special pub. (Final). J. S. Pruitt. Oct 90, 56p NIST/SP-250/40

Also available from Supt. of Docs. as SN003-003-03034-1.

PB91-133900 Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Quantum Metrology Div.

Parity-Unfavored Transitions in Resonant Photoemission from Ar, Kr, and Xe: Experimental and

Theoretical Results.

Final rept.

J. W. Cooper, D. W. Lindle, T. A. Carlson, D. R. Mullins, C. E. Beall, B. W. Yates, J. W. Taylor, and F. A. Grimm. 1990, 10p

Pub. in Jnl. of Electron Spectroscopy and Related Phenomena 51, p397-406 1990.

Not available NTIS
National Inst. of Standards and Technology (NEL),
Boulder, CO. Electromagnetic Technology Div.
HIgh-Resolution, Tunneling-Stabilized Magnetic
Imaging and Recording. Not available NTIS Final rept.

J. Moreland, and P. Rice. 1990, 3p Pub. in Applied Physics Letters 57, n3 p310-312, 16 Jul

PB91-134502 Not available NTIS National Inst. of Standards and Technology (NML), Boulder, CO. Thermophysics Div. Thermal Conductivity of a Moderately Dense Gas.

Final rept.
C. A. Nieto de Castro, D. G. Friend, R. A. Perkins, and J. C. Rainwater. 1990, 8p
Pub. in Chemical Physics 145, p19-26 1990.

PB91-134577 Not available NTIS National Inst. of Standards and Technology (NML), Boulder, CO. Thermophysics Div. Thermal Conductivity and Heat Capacity of Gaseous Argon.

H. M. Roder, R. A. Perkins, and C. A. Nieto de

Castro. 1989, 24p Pub. in International Jnl. of Thermophysics 10, n6 p1141-1164 Nov 89.

PB91-134643 Not available NTIS Notional Inst. of Standards and Technology (NML), Boulder, CO. Quantum Physics Div. Lunar Gravitational Wave Antenna Using a Laser Interferometer.

Final rept.

R. T. Stebbins, and P. L. Bender. 1990, 14p

Pub. in AIP Conference Proceedings 202, Physics and Astrophysics from a Lunar Base, NASA Workshop (1st), Stanford, CA., May 19-20, 1989, p188-201 1990.

PB91-144360 PC A03/MF A01 National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Center for Computing and Applied Mathematics

Space Marching Difference Schemes In the Nonlinear Inverse Heat Conduction Problem.

A. S. Carasso. 21 Nov 90, 41p NISTIR-4482

PB91-147116 Not available NTIS National Bureau of Standards (NML), Gaithersburg, Not available NTIS MD. Radiation Physics Div.
Glant Resonances In the Transition Regions of the

Periodic Table. Final rept.

C. W. Clark, and T. B. Lucatorto. 1986, 15p Sponsored by Air Force Office of Scientific Research, Bolling AFB, DC.

Pub. in Giant Resonances in Atoms, Molecules, and Solids, p137-151 1986.

PB91-147124 Not available NTIS National Bureau of Standards (NML), Gaithersburg, MD. Electricity Div.

Adjustment of the Fundamental Physical Constants: A Report of the CODATA Task Group on Fundamental Constants, 1986.

Final rept. E. R. Cohen, and B. N. Taylor. 1986, 39p Sponsored by Rockwell International, Thousand Oaks, CA. Science Center.

Pub. in CODATA Bulletin, n63 39p 1986.

Not available NTIS PB91-147173 National Inst. of Standards and Technology (NML), Gaithersburg, MD. Quantum Metrology Div. Selective Excitation of X-ray Emission Spectra.

Final rept.
P. L. Cowan. 1990, 7p
Pub. in Physica Scripta T31, p112-118 1990.

PB91-147249 Not available NTIS National Bureau of Standards (NML), Gaithersburg, MD. Ionizing Radiation Div.

Preparation and Properties of Monomolecular Films for Use as Radioactive Source Mounts. Final rept.

L. J. Dobrilovic, M. Simovic, D. J. Bek-Uzarov, J. M. R. Hutchinson, and W. B. Mann. 1988, 7p Pub. in Applied Radiation and Isotopes 39, n9 p999-1005 1988.

PB91-147355 Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Center for Radiation Research. Electrofission in the Quasifree and Delta Regions.

K. Hansen, J. O. Adler, K. I. Blomqvist, D. Nilsson, A. Sandell, B. Schroder, W. R. Dodge, J. W. Lightbody, J. S. Connell, J. R. Calarco, J. P. Connelly, F. W. Hersman, W. Kim, and M. Leuschner. 1990, 6p Pub. in Physical Review C 41, n4 p1619-1624 Apr 90.

PB91-147462 Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Atomic and Plasma Radiation Div. Transltions and Energy Levels for Cu-Like Yb(41+), Ta(44+), and U(63+). Final rept.

D. R. Kania, B. J. MacGowan, C. J. Keane, C. M. Brown, and J. O. Ekberg. 1990, 4p Sponsored by Department of Energy, Washington, DC. Pub. in Jnl. of the Optical Society of America B 7, n10 p1993-1996 Oct 90.

PB91-147496 Not available NTIS National Inst. of Standards and Technology (NEL), Boulder, CO. Electromagnetic Technology Div.
Global Stability of the Chaotic State Near an Interior Crisis. Final rept. R. L. Kautz. 1989, 20p Contract N00014-85-F-0085

Sponsored by Office of Naval Research, Arlington, VA. Pub. in Structure, Coherence and Chaos in Dynamical Systems, p207-226 1989.

PB91-147587 Not available NTIS National Bureau of Standards (NML), Gaithersburg, MD. Center for Radiation Research. Possible (e,e'2N) Studies at CEBAF. Final rept.

J. W. Lightbody. 1988, 9p Pub. in Proceedings of Workshop on Perspectives in Nuclear Physics at Intermediate Energies (3rd), Tri-este, Italy, May 18-22, 1987, p455-473 1988.

PB91-147959 Not available NTIS National Inst. of Standards and Technology (NML). Gaithersburg, MD. Center for Radiation Research. Muon Sticking in Catalysed d-t Fusion: Nuclear Resonance Effect. Final rept.

J. Rafelski, B. Muller, M. Danos, G. Velarde, and E.

Minguez. 1987, 6p
Pub. in Proceedings of International Conference on
Emerging Nuclear Energy Systems (4th), Madrid,
Spain, June 30-July 4, 1986, p383-388 1987.

Not available NTIS PR91-148684 National Inst. of Standards and Technology (NML), Boulder, CO. Quantum Physics Div. Close-Coupling Calculation for the (2)(Sigma sub u)(+) State of (H sub 2)(-).
Final rept.

T. Gorczyca, and D. W. Norcross. 1990, 7p Grant NSF-PHY86-04504 Sponsored by National Science Foundation, Washing-

ton, DC. Pub. in Physical Review A 42, n9 p5132-5138, 1 Nov PB91-148692 Not available NTIS National Bureau of Standards (NML), Gaithersburg,

National Bureau of Standards (INML), Gaitnersburg, MD. Quantum Metrology Group.

Determination of the Neutron Mass and Implications for Fundamental Constants.

G. L. Greene, E. G. Kessler, M. S. Dewey, and R. D. Deslattes. 1987, 5p

Pub. in Proceedings of International Conference on Neutron Physics, Kiev, Ukraine, USSR, September 21-25, 1987, p76-80.

PB91-148718 Not available NTIS National Inst. of Standards and Technology (NEL), Boulder, CO. Thermophysics Div. Anisotropic Structure of a Simple Liquid.

Final rept.

H. J. M. Hanley. 1988, 16p Sponsored by Department of Energy, Washington, DC. Office of Basic Energy Sciences.

Pub. in Proceedings of the Winter Meeting on Statistical Physics Lectures on Thermodynamics and Statistical Mechanics (17th), Oaxtepec, Mexico, January 5-8, 1988, p109-124.

PB91-149203 Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Atomic and Plasma Radiation Div. Precise Experimental Test of Calculated Two-Electron Lamb Shifts in Helium. Final rept.

C. J. Sansonetti, J. D. Gillaspy, and C. L. Cromer.

1990, 4p Pub. in Physical Review Letters 65, n20 p2539-2542, 12 Nov 90.

PB91-149245 Not available NTIS National Inst. of Standards and Technology (NML), Boulder, CO. Quantum Physics Div. Nonresonant Charge Transfer in the Threshold Region for (3)He(+) + (4)He(sub<-sup>) (3)He + (4)He(+).

Final rept. M. M. Schauer, S. R. Jefferts, and G. H. Dunn. 1990,

Grant NSF-PHY86-04504 Sponsored by National Science Foundation, Washington, DC

Pub. in Physical Review A 42, n9 p5332-5337, 1 Nov 90.

PB91-149971 Not available NTIS National Inst. of Standards and Technology (NML), Boulder, CO. Quantum Physics Div.

Optical Potential Approach to Electron and Positron Scattering from Noble Gases. 2. Neon. Final rept.

K. Bartschat, R. P. McEachran, and A. D. Stauffer.

Pub. in Jnl. of Physics B: Atomic and Molecular Physics 23, p2349-2355 1990.

PB91-150011 Not available NTIS National Inst. of Standards and Technology (MSEL), Gaithersburg, MD. Reactor Radiation Div.
Nonlocal Phase Shifts Induced by Static Electric
Fields in Neutron Interferometers When the Path-

**Enclosed Charge Vanishes.** Final rept. R. C. Casella, 1990, 4p

Pub. in Physical Review Letters 65, n18 p2217-2220, 29 Oct 90.

Not available NTIS PB91-158634 National Bureau of Standards (NML), Gaithersburg, MD. Center for Basic Standards. Accurate Spectroscopy in the X-ray Region.

Final rept. R. D. Deslattes. 1988, 8p

Pub. in Nuclear Instruments and Methods in Physics Research B31, n1-2 p51-58 Apr 88.

## **PHYSICS**

#### General

PB91-158881 Not available NTIS National Bureau of Standards (NML), Gaithersburg, MD. Molecular Spectroscopy Div.

Explicit Mapping of the Set of Dynamical Symmetries onto the Set of Equivalent Lagrangians for Systems with One Degree of Freedom.

Final rept.

C. Leubner, and M. A. M. Marte. 1986, 6p Pub. in Physics Letters A 117, n2 p67-72, 28 Jul 86.

PB91-167205 PC A03/MF A01 National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Center for Computing and Applied Mathematics. Uncertainty and Accuracy in Physical Measurements.

Special pub. (Final). H. H. Ku. Dec 90, 14p NIST/SP-805 Also available from Supt. of Docs.

Not available NTIS National Bureau of Standards (NML), Gaithersburg, MD. Ionizing Radiation Div.
Status of Beta-Particle Calibration Studies at NBS. Final rept. C. G. Soares, and J. S. Pruitt. 1987, 3p Pub. in Proceedings of Department of Energy Workshop on Beta Measurements, Albuquerque, NM., January 23-24, 1986, p169-171 1987.

PB91-175265

PB91-159236 Not available NTIS National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Electricity Div.
Preface to Book Entitled 'Nonequilibrium Effects

in Ion and Electron Transport'.

Final rept.

R. J. Van Brunt. 1990, 2p Pub. in Nonequilibrium Effects in Ion and Electron Transport, pv-vi 1990.

PB91-159251 Not available NTIS National Bureau of Standards (NML), Gaithersburg, MD. Office of Standard Reference Data.

Steam Tables. Final rept.

H. J. White, 1987, 10p

Pub. in Encyclopedia of Physical Science and Technology, v13 p328-337 1987.

PB91-159285 Not available NTIS National Inst. of Standards and Technology (NML), Boulder, CO. Time and Frequency Div. Progress at NIST on Absolute Frequency Standards Using Stored Ions.

Final rept. D. J. Wineland, J. C. Berquist, J. J. Bollinger, W. M. Itano, D. J. Heinzen, S. L. Gilbert, C. H. Manney, M. G Raizen, and C. S. Weimer. 1990, 6p

See also PB90-188616. Sponsored by Office of Naval Research, Arlington, VA., and Air Force Office of Scientific Research, Bolling AFB, DC.
Pub. in Proceedings of European Frequency and Time

Forum (4th), Neuchatel, Switzerland, March 13-15, 1990, p267-272.

PB91-159301 Not available NTIS National Bureau of Standards (NML), Gaithersburg, MD. Radiation Physics Div.

Photoionization and Collisional Ionization of Excited Atoms Using Synchrotron and Laser Radiations.

Final rept. F. J. Wuilleumier, D. L. Ederer, and J. L. Picque. 1987, 90p

Pub. in Advances in Atomic and Molecular Physics 23, p197-286 1987.

Not available NTIS PR91-161976 National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Statistical Engineering Div. Cross-Validation Procedure for Stopping the EM Algorithm and Deconvolution of Neutron Depth Profiling Spectra. Final rept.

K. Coakley. 1991, 7p Pub. in IEEE (Institute of Electrical and Electronics Engineers) Transactions on Nuclear Science 38, n1 p9-15 Feb 91.

PB91-162123 Not available NTIS National Inst. of Standards and Technology (NML), Boulder, CO. Time and Frequency Div. Quantum Optics of Single, Trapped Ions. Final rept. W. M. Itano, J. C. Bergquist, F. Diedrich, and D. J.

Wineland. 1990, 5p Sponsored by Air Force Office of Scientific Research, Bolling AFB, DC., and Office of Naval Research, Arlington, VA

Pub. in Coherence and Quantum Optics VI, p539-543 1990.

PB91-174722 Not available NTIS National Inst. of Standards and Technology (NML), Boulder, CO. Quantum Physics Div. Gyroscope-Welghing Experiment Revisited -- with a Null Result. Final rept.

J. E. Faller, W. J. Hollander, P. G. Nelson, and M. P.

McHugh. 1990, 5p Pub. in Proceedings of Recontre de Moriond New and Exotic Phenomena (25th), Les Arcs, Savoie, France, January 20-27, 1990, p197-201.

PB91-174748 Not available NTIS National Inst. of Standards and Technology (NEL), Boulder, CO. Electromagnetic Technology Div. Anomalous Magnetoresistance in Al/Al-Alloy Composite Conductors. Final rept.

F. R. Fickett, and C. A. Thompson. 1990, 8p Sponsored by Wright Research and Development Center, Wright-Patterson AFB, OH.

Pub. in Advances in Cryogenic Engineering (Materials), v36 p671-678 1990.

PB91-174755 Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Ionizing Radiation Div.
New Test of Quantum Mechanics: Is Planck's Constant Unique. Final rept

E. Fischbach, G. L. Greene, and R. J. Hughes. 1991,

Sponsored by Department of Energy, Washington, DC Pub. in Physical Review Letters 66, n3 p256-259, 21 Jan 91.

PB91-174888 Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Surface Science Div. Instrumentation of X-ray Beam Lines with PIN **Diode Detectors.** 

Final rept. T. J. Jach. 1990, 4p

Pub. in Nuclear Instruments and Methods in Physics Research A299, p76-79 1990.

PB91-174987 Not available NTIS National Bureau of Standards (NEL), Gaithersburg, MD. Precision Engineering Div.

Optical Levitation of Single Particles. Final rept.

T. R. Lettieri. 1988, 10p Pub. in Proceedings of Scientific Conference on Obscuration and Aerosol Research, Edgewood, MD., June 26-30, 1987, p305-314 1988.

Not available NTIS PB91-175083 National Inst. of Standards and Technology (NML), Boulder, CO. Quantum Physics Div. Gravitational Radiation Óbservations on the Moon.

R. T. Stebbins, J. W. Armstrong, P. L. Bender, R. W. P. Drever, R. W. Hellings, and P. R. Saulson. 1990,

Pub. in Proceedings of NASA Workshop on Astrophysics from the Moon, Annapolis, MD., February 5-7, 1990, p637-646. PB91-175273 Not available NTIS National Inst. of Standards and Technology (NML), Boulder, CO. Quantum Physics Div.

Test of Newton's Inverse Square Law of Gravity Using the 300 m Tower at Erie, Colorado: Newton Vindicated on the Plains of Colorado.

Final rept. C. C. Speake, T. M. Niebauer, M. P. McHugh, P. T. Keyser, J. E. Faller, J. Y. Curz, J. C. Harrison, J. Makinen, and R. B. Beruff. 1990, 8p

Pub. in Proceedings of Rencontre de Moriond New and Exotic Phenomena (25th), Les Arcs, Savoie, France, January 20-27, 1990, p255-262.

PB91-175364 Not available NTIS National Inst. of Standards and Technology (PL), Gaithersburg, MD. Atomic Physics Div. Spectrum and Energy Levels of the Xenonlike Ion Ce V.

Final rept. A. Redfors, and J. Reader. 1991, 7p Sponsored by Department of Energy, Washington, DC. Pub. in Physical Review A 43, n5 p2367-2373, 1 Mar

Not available NTIS PB91-175380 National Inst. of Standards and Technology (NML), Boulder, CO. Quantum Physics Div. Search for a Composition Dependent Force Using a Liquid-Supported Torsion Balance.

Final rept. M. P. McHugh, P. T. Keyser, and J. E. Faller. 1990,

Pub. in Proceedings of the Recontre de Moriond New and Exotic Phenomena (25th), Les Arcs, Savoie, France, January 20-27, 1990, p233-236.

Not available NTIS PB91-175430 National Bureau of Standards (NEL), Boulder, CO. Chemical Engineering Science Div. Saran Carbon Cryogenic Regenerator for Liquid

Final rept. L. V. Munukutla, J. A. Jones, and R. Radebaugh. 1988, 10p

PB91-175497

Pub. in Proceedings of Interagency Meeting on Cryocoolers, Monterey, CA., August 17, 1988, p109-118.

National Inst. of Standards and Technology (NML), Boulder, CO. Quantum Physics Div. Spin-Dependent Electron-Impact Excitation of Sodium. Final rept. H. L. Zhou, B. L. Whitten, G. Snitchler, D. W. Norcross, and J. Mitroy. 1990, 6p Contract DE-Al05-86ER53237

Not available NTIS

Sponsored by Department of Energy, Washington, DC. Office of Basic Energy Sciences. Pub. in Physical Review A 42, n7 p3907-3912, 1 Oct

Not available NTIS PB91-175513 National Bureau of Standards (NML), Gaithersburg, MD. Radiation Physics Div. Of What Use Is Basic Research. Final rept.

T. B. Lucatorto. 1987, 1p Pub. in Candela Wavelength, p5 1987.

PB91-175521 Not available NTIS National Bureau of Standards (IMSE), Gaithersburg, MD. Reactor Radiation Div.

Fe-W Supermirrors for Polarizing Neutrons. Final rept.

C. F. Majkrzak, D. A. Neumann, J. R. D. Copley, and R. P. DiNardo. 1988, 6p Pub. in Proceedings of 1987 Fall MRS Meeting, v103

p115-120 1988.

PB91-175547 Not available NTIS National Bureau of Standards (NML), Gaithersburg,

MD. Ionizing Radiation Div. Calculation of Beta-Particle Counting Efficiency for Liquid Scintillation Systems with Three Phototubes.

Final rept

A. G. Malonda, and B. M. Coursey. 1988, 6p Pub. in Applied Radiation and Isotopes - International Jnl. of Radiation Applications and Instrumentation 39, n12 p1191-1196 1988.

PB91-175588 Not available NTIS National Bureau of Standards (NML), Gaithersburg, MD. Atomic and Plasma Radiation Div.

Working Group 2: Atomic Transition Probabilities. Final rept.

W. L. Wiese, 1988, 7p

Pub. in Reports of Astronomy, vXXA p117-123 1988.

PB91-187088 Not available NTIS National Bureau of Standards (NML), Gaithersburg, MD. Atomic and Plasma Radiation Div.

Electric Quadrupole and Magnetic Dipole Transition Probabilities in Potassium Isoelectronic Se-

M. A. Ali, and Y. K. Kim. 1988, 6p Sponsored by Department of Energy, Washington, DC.

Office of Fusion Energy.

Pub. in Physical Review A 38, n8 p3992-3997 1988.

Not available NTIS National Bureau of Standards (NML), Gaithersburg, MD. Temperature and Pressure Div. H2O(I)-H2O(II)-H2O(L) Triple Point of Water as a Fixed Pressure Point.

Final rept.

N. Bignell, and V. E. Bean. 1988, 5p Pub. in Metrologia 25, n4 p205-209 1988.

Not available NTIS PB91-187302 National Inst. of Standards and Technology (NML), Gaithersburg, MD. Quantum Metrology Div. Angular Distribution of Ejected Electrons in Resonant Auger Processes of Ar, Kr, and Xe. Final rept.

T. A. Carlson, D. R. Mullins, C. E. Beall, B. W. Yates, J. W. Taylor, D. W. Lindle, and F. A. Grimm. 1989,

Pub. in Physical Review A: General Physics 39, n3 p1170-1185 1989.

PB91-187310 Not available NTIS National Bureau of Standards (NML), Gaithersburg, MD. Quantum Metrology Group. Unusual Degree of Angular Anisotropy in the Res-

onant Auger Spectrum of Kr. Final rept.

Final rept.
T. A. Carlson, D. R. Mullins, C. E. Beall, B. W. Yates, J. W. Taylor, D. W. Lindle, B. P. Pullen, and F. A. Grimm. 1988, 4p
Pub. in Physical Review Letters 60, n14 p1382-1385

Not available NTIS PB91-187393 National Inst. of Standards and Technology (NML), Gaithersburg, MD. Quantum Metrology Div.

Angular Distributions of Electrons in Resonant Auger Spectra.

Final rept.

J. W. Cooper, 1989, 3p Pub. in Physical Review A 39, n7 p3714-3716, 1 Apr

PB91-187401 Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Quantum Metrology Div. Polarization and Anisotropy of X-ray Emission from Molecules.

Final rept.

P. L. Cowan. 1990, 14p Pub. in Proceedings of International Conference on X-Ray and Inner-Shell Processes (15th), Knoxville, TN., July 9-13, 1990, p696-709.

PB91-187443 Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Quantum Metrology Div. Some Historical Remarks Concerning These Conferences: With Emphasis on the X-ray Component.

Final rept. R. D. Deslattes, 1990, 10p

Pub. in Proceedings of International Conference on Xray and Inner-Shell Processes (15th), Knoxville, TN., July 9-13, 1990, p3-12.

PB91-189597 Not available NTIS National Bureau of Standards (NML), Gaithersburg, MD. Atomic and Plasma Radiation Div.

Quantum Electrodynamic Contributions to Spin Orbit Splitting in the Ground State of Aluminum-Like lons. Final rept.

Y. K. Kim, V. Kaufman, J. Sugar, and M. A. Ali. 1988, 5n

Sponsored by Department of Energy, Washington, DC. Office of Fusion Energy, and Howard Univ., Washing-

Pub. in Jnl. of the Optical Society of America B 5, n10 p2225-2229 1988.

Not available NTIS PB91-189605 National Bureau of Standards (NML), Gaithersburg, MD. Atomic and Plasma Radiation Div.

Relativistic and Correlation Effects in the 2s3p

Configuration of Beryllium-Like Ions.

Y. K. Kim, A. W. Weiss, and W. C. Martin. 1988, 10p Sponsored by Department of Energy, Washington, DC. Office of Fusion Energy.

Pub. in Jnl. of the Optical Society of America B 5, n10 p2215-2224 1988.

PB91-189746 Not available NTIS National Bureau of Standards (NML), Gaithersburg, MD. Electricity Div.

Observation of Atoms Laser-Cooled Below the Doppler Limit.

Final rept. P. D. Lett, R. N. Watts, C. I. Westbrook, W. D. Phillips, and P. L. Gould. 1988, 4p Sponsored by Office of Naval Research, Arlington, VA. Pub. in Physical Review Letters 61, n2 p169-172, 11

Jul 88.

Not available NTIS PB91-189753 National Inst. of Standards and Technology (NML), Gaithersburg, MD. Quantum Metrology Div.
Doppler Shift Attenuation Lifetime Measurements
in (54)Cr Following Thermal Neutron Capture.
Final rept.

R. P. Lieb, H. G. Borner, M. S. Dewey, J. Jolie, S. J. Robinson, S. Ulbig, and C. Winter. 1988, 5p Pub. in Physics Letters B 215, n1 p50-54, 8 Dec 88.

PB91-190009

Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Atomic and Plasma Radiation Div. Dielectronic Recombination Rate Coefficients of O(5+) and O(2+).

Final rept.

L. J. Roszman. 1989, 3p

Pub. in Physica Scripta T28, p36-38 1989.

PB91-190033 Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Radiation Physics Div.

Energy Levels and Transition Probabilities in the Ground State Configuration of Sulfur-Like Ions. Final rept.

E. B. Saloman, and Y. K. Kim. 1989, 18p Pub. in Atomic Data and Nuclear Data Tables 41, n2 p339-356 1989.

PB91-192567 Not available NTIS Institute of Physics, Belgrade (Yugoslavia).

Experimental Stark Widths and Shifts for Spectral Lines of Neutral and Ionized Atoms: A Critical Review of Selected Data for the Period 1983 through 1988.

Bimonthly rept.

N. Konjevic, and W. L. Wiese. c1990, 79p

Prepared in cooperation with National Inst. of Standards and Technology, Gaithersburg, MD.

Included in Jnl. of Physical and Chemical Reference Data, v19 n6 p1307-1386 Nov/Dec 90. Available from American Chemical Society, 1155 16th St., NW, Washington, DC. 20036-9976.

PB91-194399 PC A04/MF A01 National Inst. of Standards and Technology, Gaithersburg, MD.

Stopping Power of Fast Charged Particles in Heavy Elements.

H. Bichsel. Apr 91, 74p NISTIR-4550

Prepared in cooperation with Bichsel (Hans), Seattle,

PB91-194407 PC A03/MF A01 National Inst. of Standards and Technology, Gaithersburg, MD.

Model for the Non-Perturbative QCD (Quantum Chromodynamics) Vacuum.

M. Danos, D. Gogny, and D. Iracane. Apr 91, 34p NISTIR-4555

Prepared in cooperation with CEA Centre d'Etudes de Bruyeres-le-Chatel, Montrouge (France).

PB91-194423 PC A04/MF A01 National Inst. of Standards and Technology (NML), Gaithersburg, MD. Electron and Optical Physics Div. Technical Activities 1990, Electron and Optical Physics Division.

C. W. Clark. May 91, 72p NISTIR-4553 See also report for 1989, PB90-207267.

PB91-194886 Not available NTIS National Bureau of Standards (NML), Gaithersburg, MD. Electricity Div.

Prospects for Electromagnetic Manipulation and Trapping of Antihydrogen. Final rept.

P. D. Lett, P. L. Gould, and W. D. Phillips. 1988, 14p Pub. in Hyperfine Interactions 44, n1-4 p335-348 1988.

PB91-194910 Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Quantum Metrology Div.

#### General

Photolonization Studies of Atoms and Molecules Using Synchrotron Radiation. Final rept.

D. W. Lindle, 1989, 6p

Pub. in Nuclear Instruments and Methods in Physics Research 280, n2-3 p161-166, 10 Aug 89.

Not available NTIS PB91-194928 National Bureau of Standards (NML), Gaithersburg, MD. Quantum Metrology Group.

Angle-Resolved Photoemission from the Ar 2p

D. W. Lindle, L. J. Medhurst, T. A. Ferrett, P. A. Heimann, M. N. Piancastelli, S. H. Liu, D. A. Shirley, T. A. Carlson, P. C. Deshmukh, G. Nasreen, and S. T. Manson. 1988, 4p

Pub. in Physical Review A 38, n5 p2371-2374, 1 Sep

PB91-195016 Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Radiometric Physics Div.
Low-Pressure Symmetric Discharge Heat Pipe and DROGS of Eu.

Final rept. H. Maoqi, L. Ronggen, and C. L. Cromer. 1990, 5p Pub. in Acta Optica Sinica 10, n5 p385-389 May 90.

PB91-195032 Not available NTIS National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Precision Engineering Div.
Relativistic Probability Amplitudes and State Preparation. Final rept.

E. Marx. 1989, 3p

Pub. in Bell's Theorem, Quantum Theory and Conceptions of the Universe, p127-129 1989.

PB91-195123 Not available NTIS National Bureau of Standards (NML), Gaithersburg, MD. Center for Radiation Research. Glueballs and Hadron Spectroscopy.

Final rept.

S. Meshkov. 1988, 9p Pub. in Proceedings of the Conference on the Intersections between Particle and Nuclear Physics (3rd), Rockport, ME., May 14-19, 1988, p796-804 1988.

Not available NTIS Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Ionizing Radiation Div. Intensifying Effect of Metallic Screens on the Sensitivity of X-ray Films at 662 keV.

Final rept. E. Navon, C. E. Dick, and G. Barnea. 1989, 4p Pub. in Jnl. of Applied Physics 65, n7 p2852-2855

PB91-195289 Not available NTIS National Bureau of Standards (NML), Gaithersburg, MD. Quantum Metrology Group.

Anomalous Lgamma2,3 X-ray Emission Spectrum

of Xe.

Final rept. M. Ohno, and R. E. LaVilla. 1988, 5p Pub. in Physical Review A 38, n7 p3479-3483 1988.

PB91-195453 Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Electricity Div. Observation of Atoms Laser Cooled Below the Doppler Limit.

Final rept. W. D. Phillips, C. I. Westbrook, P. D. Lett, R. N. Watts, P. L. Gould, and H. J. Metcalf. 1989, 3p Pub. in At. Phy. 11, p633-635 1989.

PB91-195503 Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Atomic and Plasma Radiation Div. Relativistic Distorted-Wave Cross Sections for Electron-Impact Excitations of Berviliumlike Ions.

W. J. Olan, J. P. Desclaux, and Y. K. Kim. 1989, 9p Pub. in Physical Review A 39, n9 p4509-4517 1989.

PB91-195511 Not available NTIS National Inst. of Standards and Technology (PL),
Gaithersburg, MD. Atomic Physics Div.
Spectrum and Energy Levels of Seven-Times-Ionized Krypton (Kr VIII) and Resonance Lines of Elght-Times-Ionized Krypton (Kr IX). Final rept.

J. Reader, N. Acquista, and V. Kaufman. 1991, 10p Sponsored by Department of Energy, Washington, DC.
Pub. in Jnl. of the Optical Society of America B 8, n3

p538-547 Mar 91.

PB91-195602 Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Atomic and Plasma Radiation Div. Dielectronic Recombination Rate Coefficients for Ions of the Fluorine Isoelectronic Sequence. Final rept.

L. J. Roszman. 1989, 2p

Sponsored by Department of Energy, Washington, DC. Office of Fusion Energy.

Pub. in Physical Review A 39, n2 p913-914 1989.

PB91-195610 Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Atomic and Plasma Radiation Div. Influence of Metastable States and Thermal Equilibration upon Dielectronic Recombination in Low Density to Moderate Density. Final rept.

L. J. Roszman. 1989, 5p

Sponsored by Department of Energy, Washington, DC.

Office of Fusion Energy. Pub. in Physical Review A 39, n4 p2073-2077 1989.

PB91-200816 Not available NTIS National Inst. of Standards and Technology (PL), Gaithersburg, MD. Atomic Physics Div. 5s(2)5p(2) - (5s(2)5p5d +5s5p(3) + 5s(2)5p6s + 5s(2)5p7s) Transitions in Sb II and 5s(2)5p -

(5s5p(2) + 5s(2)nl) Transitions in Sb III. Final rept.

B. Arcimowicz, Y. N. Joshi, and V. Kaufman. 1989,

Pub. in Canadian Jnl. of Physics 67, n6 p572-578

PB91-200840 Not available NTIS National Inst. of Standards and Technology (NML), Boulder, CO. Time and Frequency Div. Clocks, Atomic and Molecular.

Final rept. J. A. Barnes, and J. J. Bollinger. 1991, 2p See also PB81-236606.

Pub. in Encyclopedia of Physics, p154-155 1991.

PB91-200857 Not available NTIS National Inst. of Standards and Technology (NML), Boulder, CO. Time and Frequency Div.
Observation of Correlations in Finite, Strongly Coupled Ion Plasmas.

Final rept. J. J. Bollinger, S. L. Gilbert, D. J. Heinzen, W. M. Itano, and D. J. Wineland. 1990, 11p Sponsored by Air Force Office of Scientific Research, Bolling AFB, DC., and Office of Naval Research, Arlington, VA.
Pub. in Proceedings of Yamada Conference (24th) on

Strongly Coupled Plasma Physics, Lake Yamanaka, Japan, August 29-September 2, 1989, p177-187 1990.

PB91-200881 Not available NTIS National Inst. of Standards and Technology (NML), Boulder, CO. Quantum Physics Div. Near-Threshold Vibrational Excitation of H2 by

Electron Impact: Resolution of Discrepancies between Experiment and Theory. Final rept

S. J. Buckman, M. J. Brunger, D. S. Newman, G. Snitchler, S. Alston, D. W. Norcross, M. A. Morrison, B. C. Saha, G. Danby, and W. K. Trail. 1990, 4p See also PB91-101584.

Pub. in Physical Review Letters 65, n26 p3253-3256, 24 Dec 90.

PB91-202903 Not available NTIS National Inst. of Standards and Technology (NEL), Boulder, CO. Electromagnetic Technology Div. Enhanced Flux Creep in Nb-Tl Superconductors After an increase in Temperature. Final rept.

R. W. Cross, and R. B. Goldfarb. 1991, 2p Sponsored by Department of Energy, Washington, DC. Pub. in Applied Physics Letters 58, n4 p415-416, 28 Jan 91.

PB91-202911 Not available NTIS National Inst. of Standards and Technology (NEL), Boulder, CO. Electromagnetic Technology Div. Hall Probe Magnetometer for SSC Magnet Cables: Effect of Transport Current on Magnetization and Flux Creep.

Final rept. R. W. Cross, and R. B. Goldfarb, 1991, 3p. Sponsored by Department of Energy, Washington, DC. Pub. in IEEE (Institute of Electrical and Electronics Engineers) Transactions on Magnetics 27, n2 p1796-1798 Mar 91.

PB91-202929 Not available NTIS National Inst. of Standards and Technology (NEL), Boulder, CO. Electromagnetic Technology Div. Correlation of Flux States Generated by Optical Switching of a Superconducting Circuit. Final rept.

C. E. Cunningham, G. S. Park, B. Cabrera, and M. E.

Huber. 1990, 2p Sponsored by Office of Naval Research, Arlington, VA. Pub. in Physica B 165 and 166, p113-114 1990.

Not available NTIS National Inst. of Standards and Technology (NML), Boulder, CO. Quantum Physics Div.

Probe for Real-Time Images of Particle Beams and Their Analyses in a Merged-Beams Apparatus.

J. L. Forand, C. Timmer, E. Wahlin, B. D. DePaola, G. H. Dunn, D. R. Swenson, and K. Rinn. 1990, 6p Contract DÉ-AI05-86ER53237

Sponsored by Department of Energy, Washington, DC. Pub. in Review of Scientific Instruments 61, n11 p3372-3377 Nov 90.

PB91-203083 Not available NTIS National Inst. of Standards and Technology (NML), Boulder, CO. Quantum Physics Div.

Measurements of Velocity-Changing Collision Ker-

Final rept. K. E. Gibble, and A. C. Gallagher. 1991, 15p Grant NSF-PHY86-04504

Sponsored by National Science Foundation, Washington, DC.

Pub. in Physical Review A 43, n3 p1366-1380, 1 Feb

Not available NTIS PB91-203125 National Inst. of Standards and Technology (NML), Boulder, CO. Quantum Physics Div.

Squeezed Quantum States of Relic Gravitons and Primordial Density Fluctuations.

Final rept. L. P. Grishchuk, and Y. V. Sidorov. 1990, 9p. Pub. in Physical Review D 42, n10 p3413-3421, 15 Nov

PB91-203166 Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Center for Radiation Research. Polarizability of the Photon. Final rept.

E. Hayward. 1989, 3p

Pub. in Physics Letters B 223, n2 p133-135, 8 Jun 89.

PB91-203216 Not available NTIS National Inst. of Standards and Technology (NEL), Boulder, CO. Electromagnetic Fields Div. Generalization of the Cornu Spiral for Lossy Media.

Final rept. D. A. Hill. 1991, 3p Pub. in Jnl. of Applied Physics 69, n3 p1772-1774, 1

Not available NTIS PB91-203240 National Inst. of Standards and Technology (NML), Boulder, CO. Quantum Physics Div.

Asymptotic Expansions of the Kernel Functions for Line Formation with Continuous Absorption.

Final rept. D. G. Hummer. 1991, 6p Contract NAGW-766, Grant NSF-AST88-02937 Sponsored by National Aeronautics and Space Administration, Washington, DC., and National Science Foundation, Washington, DC.

Pub. in Jnl. of Quantitative Spectroscopy and Radiative Transfer 45, n4 p211-216 1991.

PB91-203257 Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Ionizing Radiation Div. NIST High-Dose Calibration Services.

Final rept.

Pub. in Nuclear Instruments and Methods in Physics Research B40-41, pt2 p1173-1177 Apr 89.

PB91-203307 Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Molecular Spectroscopy Div.

Notes and Comments on Roundtable Discussion
on Laser-Assisted Collisions and Collision-Induced Spectra.

Final rept.
P. S. Julienne, and L. Frommhold. 1989, 7p Pub. in Spectral Line Shapes, p800-806 1989.

Not available NTIS National Inst. of Standards and Technology (NEL), Boulder, CO. Electromagnetic Fields Div.
Estimation of Electromagnetic Fields in Complex Environments.

Final rept.

M. Kanda, and J. Randa. 1991, 6p
Pub. in Proceedings of the International Zurich Symposium and Technical Exhibition on Electromagnetic Compatibility (9th), Zurich, Switzerland, March 12-14, 1991, p337-342.

Not available NTIS PB91-203372 National Bureau of Standards (NEL), Gaithersburg, MD. Statistical Engineering Div. **Experimentation and Measurement.** 

Final rept. H. H. Ku. 1988, 5p See also PB84-233659. Pub. in Basic Questions in Fatigue: ASTM STP 924, v1 p9-13 1988.

PB91-203398 Not available NTIS National Bureau of Standards (NML), Gaithersburg, MD. Ionizing Radiation Div.

Cross-Section Measurements in the Intermediate-**Energy Standard Neutron Field.** Final rept.

G. P. Lamaze, C. M. Eisenhauer, J. A. Grundl, E. D. McGarry, and F. J. Schima. 1988, 4p

Pub. in Proceedings of International Conference on Nuclear Data for Science and Technology, Mito, Japan, May 30, 1988, p1033-1036.

PB91-203406 Not available NTIS National Bureau of Standards (NML), Gaithersburg, MD. Ionizing Radiation Div.

Spectrum-Averaged Cross-Section Measurement of (103)Rh(n,n)(103m)Rh in the (252)Cf Fission Neutron Spectrum. Final rept.

G. P. Lamaze, F. J. Schima, C. M. Eisenhauer, and V. Spiegel. 1988, 5p

Pub. in Nuclear Science and Engineering 100, n1 p43-47 Sep 88.

PB91-203422 Not available NTIS National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Precision Engineering Div. Calibration of the NBS 10mum Space Beads. Final rept.

T. R. Lettieri, A. W. Hartman, G. G. Hembree, and E. Marx. 1989, 11p

Pub. in Jnl. of Colloid Interface Science 131, n2 p550-560 1989.

PB91-203430 Not available NTIS National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Precision Engineering Div. Dimensional Calibration of an NBS 0.3-mum-Diameter Particle-Sizing Standard.

Final rept. T. R. Lettieri, and G. G. Hembree. 1989, 7p Pub. in Jnl. of Colloid Interface Science 127, n2 p566-572 1989.

PB91-203455 Not available NTIS National Bureau of Standards (NML), Gaithersburg, MD. Office of Standard Reference Data. Critical Data in Physics and Chemistry.

D. R. Lide, and B. B. Molino. 1987, 12p Pub. in Encyclopedia of Physical Science and Technology, v3 p786-797 1987.

PB91-203638 Not available NTIS National Inst. of Standards and Technology (NML), Boulder, CO. Quantum Physics Div.

Observation of the Cesium Clock Transition Using Laser-Cooled Atoms in a Vapor Cell. Final rept.

C. Monroe, H. Robinson, and C. Wieman. 1991, 3p Pub. in Optics Letters 16, n1 p50-52, 1 Jan 91.

PB91-203778 Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Radiation Physics Div. High Harmonic Generation in Hydrogenic Ions. Final rept.

L. Pan, K. T. Taylor, and C. W. Clark. 1989, 4p Pub. in Physical Review A 39, n9 p4894-4897, 1 May

Not available NTIS PB91-203828 National Inst. of Standards and Technology (NEL), Boulder, CO. Electromagnetic Technology Div.

Effect of Mechanical Deformation on Nb-Ti Filament Proximity-Effect Coupling at the Edges of SSC Cables.

Final rept. T. W. Petersen, and R. B. Goldfarb. 1991, 2p

Sponsored by Department of Energy, Washington, DC. Div. of High Energy Physics.

Pub. in IEEE (Institute of Electrical and Electronics Engineers) Transactions on Magnetics 27, n2 p1809-1810 Mar 91.

PB91-203919 Not available NTIS National Inst. of Standards and Technology (NEL), Boulder, CO. Electromagnetic Technology Div. New Look at the Bitter Method of Magnetic Imaging.

P. Rice, and J. Moreland. 1991, 2p

Pub. in Review of Scientific Instruments 62, n3 p844-845 Mar 91

PB91-204115 Not available NTIS National Inst. of Standards and Technology (NML), Boulder, CO. Quantum Physics Div. Test of the Inverse-Square Law of Gravitation Using the 300-m Tower at Erie, Colorado. Final rept. C. C. Speake, T. M. Niebauer, M. P. McHugh, P. T. Keyser, J. E. Faller, J. Y. Cruz, J. C. Harrison, J. Makinen, and R. B. Beruff. 1990, 5p Pub. in Physical Review Letters 65, n16 p1967-1971,

PB91-204164 Not available NTIS National Inst. of Standards and Technology (NML), Boulder, CO. Quantum Physics Div. Collisional Energy Transfer between Excited Sr

Atoms. Final rept.

15 Oct 90.

H. G. C. Werij, M. Harris, J. Cooper, A. Gallagher, and J. F. Kelly. 1991, 13p Contract NSF-PHY86-04504

Sponsored by National Science Foundation, Washing-

Pub. in Physical Review A 43, n5 p2237-2249, 1 Mar

PB91-216705 PC A07/MF A02 National Inst. of Standards and Technology, Gaithers-

burg, MD. Journal of Research of the National Institute of Standards and Technology. May-June 1991. Volume 96. Number 3.

1991, 150p.

Also available from Supt. of Docs. as SN703-027-00040-7. See also PB91-216713 through PB91-216762 and PB91-187617. Library of Congress catalog card no. 89-656121.

PC A04/MF A01 PB91-216812 National Inst. of Standards and Technology (PL), Gaithersburg, MD.

Evidence for Surface alpha Particle Clusters in (nat)AG(197)Au from the (e,alpha) Reaction.
W. R. Dodge. Jun 91, 57p NISTIR-4495

Not available NTIS PB91-236604 National Inst. of Standards and Technology (MSEL), Gaithersburg, MD. Reactor Radiation Div.

Transmission Properties of a Counter-Rotating Pair of Disk Choppers. Final rept.

J. R. D. Copley. 1991, 10p Pub. in Nuclear Instruments and Methods in Physics Research A303, p332-341 1991.

## **PHYSICS**

#### General

PB91-236745 Not available NTIS National Inst. of Standards and Technology (PL), Gaithersburg, MD. Electron and Optical Physics Div. Associative Ionization of Ultra-Cold Laser Trapped Sodium Atoms. Final rept.

P. L. Gould, P. D. Lett, R. N. Watts, C. I. Westbrook, P. S. Julienne, W. D. Phillips, H. R. Thorsheim, and J. Weiner. 1989, 14p Pub. in At. Phys. 11, p215-228 1989.

PB91-236828 Not available NTIS National Inst. of Standards and Technology (PL), Boulder, CO. Time and Frequency Div. Reply to Comment on 'Quantum Zeno Effect'.

Final rept. W. M. Itano, D. J. Heinzen, J. J. Bollinger, and D. J. Wineland. 1991, 2p See also PB90-254715.

Pub. in Physical Review A 43, n9 p5168-5169, 1 May

Not available NTIS PB91-236976 National Inst. of Standards and Technology (EEEL), Boulder, CO. Electromagnetic Fields Div. Cryogenic Fatigue of High-Strength Aluminum

Alloys and Correlations with Tensile Properties.

L. Ma, J. K. Han, R. L. Tobler, R. P. Walsh, and R. P. Reed. 1990, 8p Sponsored by Department of Energy, Washington, DC.

Office of Fusion Energy, and Universities Research Association, Berkeley, CA. Superconducting Super Collider Central Design Group.
Pub. in Advances in Cryogenic Engineering (Materials) vs. 875, 382, 1000

als), v36 p375-382 1990.

PB91-237115 Not available NTIS National Inst. of Standards and Technology (EEEL), Gaithersburg, MD. Electricity Div.

Monitoring the Mass Standard via the Comparison

of Mechanical to Electrical Power.

Prinal rept.
P. T. Olsen, W. L. Tew, E. R. Williams, R. E. Elmquist, and H. Sasaki. 1991, 6p
See also PB91-101501.

Pub. in IEEE (Institute of Electrical and Electronics Engineers) Transactions on Instrumentation and Measurement 40, n2 p115-120 Apr 91.

PB91-237461 Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Gas and Particulate Science Div. Structure of Odd-Odd (132)Sb.

Final rept. C. A. Stone, W. B. Walters, and S. H. Faller. 1989,

Pub. in Physical Review C 39, n5 p1963-1971 1989.

PB91-237495 Not available NTIS National Inst. of Standards and Technology (PL),

Gaithersburg, MD. Atomic Physics Div.
Extreme-Ultraviolet Spectra of Pd, Ag, Cd, and Sn Ions Observed in a 1.3-keV Tokamak Plasma. Final rept.

Sponsored by Department of Energy, Washington, DC. Pub. in Jnl. of the Optical Society of America B 8, n5 p913-916 May 91.

PB91-237503 Not available NTIS National Inst. of Standards and Technology (PL), Gaithersburg, MD. Atomic Physics Div. Spectra of the P I Isoelectronic Sequence from Co XIII to Mo XXVIII.

Final rept.

J. Sugar, V. Kaufman, and W. L. Rowan. 1991, 5p
Contract DE-AC05-78ET-53043
Sponsored by Department of Energy, Washington, DC.
Pub. in Jnl. of the Optical Society of America B 8, n1

PB91-237511 Not available NTIS National Inst. of Standards and Technology (PL), Gaithersburg, MD. Atomic Physics Div. Beam-Foil Study of Two-Electron Transitions in

Cu-Like Ions. Final rept.

Filial rept.
J. Sugar, E. Trabert, G. Moller, P. H. Heckmann, J. H. Blanke, and I. Martinson. 1991, 6p
Pub. in Physica Scripta 43, p484-489 1991.

PB91-237594 Not available NTIS National Inst. of Standards and Technology (PL), Gaithersburg, MD. Physics Lab. Office. Basic Standards and Fundamental Constants.

B. N. Taylor. 1989, 3p
Pub. in IEEE (Institute of Electrical and Electronics Engineers) Transactions on Instrumentation and Measurement 38, n2 p164-166 1989.

PB91-237750 Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Atomic and Plasma Radiation Div. Spectroscopic Data Base for Carbon and Oxygen.

W. L. Wiese. 1989, 2p Pub. in Physica Scripta T28, p10-11 1989.

PB91-237768 Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Atomic and Plasma Radiation Div. Unified Set of Atomic Transition Probabilities for Neutral Argon.

Final rept. W. L. Wiese, J. W. Brault, K. Danzmann, M. Kock,

and V. Helbig. 1989, 11p Pub. in Physical Review A 39, n5 p2461-2471 1989.

PB91-240762 PC A04/MF A01 National Inst. of Standards and Technology (MSEL), Gaithersburg, MD. Polymers Div. High Magnetic Field Facilities in Japan Related to Superconductivity Research (Japan Technology

R. D. Shull. Aug 91, 62p NISTIR-4593

PB92-109032 National Inst. of Standards and Technology (PL), Gaithersburg, MD. International System of Units (SI).

Special pub. (Final). B. N. Taylor. Aug 91, 64p NIST/SP-330 Also available from Supt. of Docs. as SN003-003-03099-6. Supersedes PB86-244159.

PB92-112358 PC A04/MF A01 National Inst. of Standards and Technology (EEEL), Boulder, CO. Electromagnetic Technology Div. Magnetic Measurements for High Energy Physics

Applications. Final rept. Jun 15 88-Jun 14 91. R. B. Goldfarb. Aug 91, 69p NISTIR-3975 Contract DE-Al05-85-ER40240 Sponsored by Department of Energy, Washington, DC. Div. of High Energy Physics.

PB92-112481 PC A04/MF A01 National Inst. of Standards and Technology (TS), Gaithersburg, MD. Standards Code and Information

Criteria for the Operation of Federally-Owned Secondary Calibration Laboratories (Ionizing Radiation).

Special pub. (Final). E. H. Eisenhower. Aug 91, 66p NIST/SP-812 Also available from Supt. of Docs. as SN003-003-03095-3.

Not available NTIS National Inst. of Standards and Technology (NML), Boulder, CO. Time and Frequency Div.

303-MHz Frequency Standard Based on Trapped Be(+) lons. Final rept.

J. J. Bollinger, D. J. Heinzen, W. M. Itano, S. L. Gilbert, and D. J. Wineland. 1991, 3p Sponsored by Office of Naval Research, Arlington, VA., and Air Force Office of Scientific Research, Boll-

ing AFB, DC.

Pub. in IEEE (Institute of Electrical and Electronics Engineers) Transactions on Instrumentation and Measurement 40, n2 p126-128 Apr 91.

PB92-116706 Not available NTIS National Bureau of Standards (NML), Gaithersburg, MD. Ionizing Radiation Div.

Dosimetry of a Nearly Monoenergetic 6- to 7-MeV Photon Source by NaI(TI) Scintillation Spectrome-

Final rept

K. C. Duvall, S. M. Seltzer, C. G. Soares, and B. W. Rust. 1988, 5p

Pub. in Nuclear Instruments and Methods in Physics Research 272, n3 p866-870 Nov 88.

Not available NTIS PB92-116714 National Bureau of Standards (NML), Gaithersburg, MD. Atomic and Plasma Radiation Div.

Atomic Spectroscopy in the 20th Century - A Tribute to Sitterly, Charlotte Moore, on the Occasion of Her 90th Birthday.

Final rept.

B. Edlen, and W. C. Martin. 1988, 4p

Pub. in Jnl. of the Optical Society of America B 5, n10 p2039-2042 1988.

PB92-116722 Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Temperature and Pressure Div. Differences between Thermodynamic Temperature and t(IPTS-68) in the Range 230C to 660C.

R. E. Edsinger, and J. F. Schooley. 1989, 12p Pub. in Metrologia 26, p95-106 1989.

PB92-116870 Not available NTIS National Inst. of Standards and Technology (NML), Boulder, CO. Time and Frequency Div.

Test of the Linearity of Quantum Mechanics by rf Spectroscopy of the (9)Be(+) Ground State. Final rept.

D. J. Heinzen, J. J. Bollinger, W. M. Itano, S. L. Gilbert, and D. J. Wineland. 1990, 3p

See also PB90-205899. Sponsored by Air Force Office of Scientific Research, Bolling AFB, DC., and Office of Naval Research, Arlington, VA.

Pub. in Proceedings of Rochester Conference on Coherence and Quantum Optics (6th), Rochester, NY., June 26-28, 1989, p479-481 1990.

PB92-117118 Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Ionizing Radiation Div.

Novel Radiation Dosimetry Systems. Final rept.

W. L. McLaughlin. 1991, 25p

Pub. in Proceedings of International Symposium on High Dose Dosimetry for Radiation Processing, Vienna, Austria, November 5-9, 1990, p3-27 1991.

PB92-117134 Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Ionizing Radiation Div.

p22-26 Jan 91.

#### Temperature Dependence of Radiochromic Film Dosimeters.

Final rept.

W. L. McLaughlin, J. C. Humphreys, W. Z. Ba, H. M. Khan, M. Al-Sheikhly, and W. J. Chappas. 1991, 12p Pub. in Proceedings of International Symposium on High Dose Dosimetry for Radiation Processing, Vienna, Austria, November 5-9, 1990, p305-316 1991. Processing,

PC A03/MF A01 PB92-126572 National Inst. of Standards and Technology (PL), Gaithersburg, MD.

Interpretation of the SI for the United States and Metric Conversion Policy for Federal Agencies. Final rept.

B. N. Taylor. Oct 91, 20p NIST/SP-814 Also available from Supt. of Docs. See also PB92-109032.

# PROBLEM-SOLVING **INFORMATION FOR** STATE & LOCAL GOVERNMENTS

## Police, Fire, & Emergency Services

PC A04/MF A01 PB91-216796 Herndom Group, Inc., Chapel Hill, NC. First Pass at Computing the Cost of Fire Safety in a

Modern Society. W. P. Meade. Jun 91, 51p NIST/GCR-91/592 Contract NIST-525BNB1C6678 Sponsored by National Inst. of Standards and Tech-

# nology (BFRL), Gaithersburg, MD.

# SPACE TECHNOLOGY

## **Astronautics**

PC A04/MF A01 PB91-144352 National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Robot Systems Div. Short-Term Evolution for the Flight Telerobotic Servicer.

R. Lumia. Dec 90, 61p NISTIR-4463

PC A06/MF A01 PB91-185090 National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Robot Systems Div.

Recommended Fine Positioning Test for the Development Test Flight (DTF-1) of the NASA Flight Telerobotic Servicer (FTS).

N. Dagalakis, A. J. Wavering, and P. Spidaliere. Feb 91, 124p NISTIR-4478

Prepared in cooperation with National Aeronautics and Space Administration, Greenbelt, MD. Goddard Space Flight Center.

## **Extraterrestial Exploration**

PB91-237875 Not available NTIS National Inst. of Standards and Technology (NML), Gaithersburg, MD. Ionizing Radiation Div.

Possible Use of Pattern Recognition for the Analy-

sis of Mars-Rover X-ray-Fluorescence Spectra. Final rept.

L. I. Yin, J. I. Trombka, S. M. Seltzer, R. G. Johnson, and J. A. Philpotts. 1989, 8p

Pub. in Jnl. of Geophysical Research 94, nNB10 p3611-3618 1989.

## General

PB91-162016 Not available NTIS National Inst. of Standards and Technology (NML),

Boulder, CO. Chemical Engineering Science Div. Apparatus for Measurement of Thermal Conductivity of Insulation Systems Subjected to Extreme Temperature Differences.

Final rept.

W. P. Dube, L. L. Sparks, A. J. Slifka, and R. M. Bitsy. 1990, 7p

Sponsored by National Aeronautics and Space Administration, Hampton, VA. Langley Research Center. Pub. in Advances in Cryogenic Engineering (Materials), v36 p853-859 1990.

## Manned Spacecraft

PB91-184804 PC A05/MF A01 National Inst. of Standards and Technology (NML), Boulder, CO. Chemical Engineering Science Div. Heat Transfer in a Compact Heat Exchanger Containing Rectangular Channels and Using Helium

D. A. Olson. Jan 91, 99p NISTIR-3959 See also PB91-107573. Sponsored by National Aeronautics and Space Administration, Hampton, VA. Langley Research Center.

PC A05/MF A01 PB91-216606 National Inst. of Standards and Technology (BFRL), Gaithersburg, MD

Material Flammability Test Assessment for Space Station Freedom.

T. J. Ohlemiller, and K. M. Villa. Jun 91, 79p NISTIR-4591, NASA-CR-187115 Sponsored by National Aeronautics and Space Administration, Cleveland, OH. Lewis Research Center.

## TRANSPORTATION

## Air Transportation

PB92-112226 PC A05/MF A01 National Inst. of Standards and Technology (MSEL), Gaithersburg, MD. Metallurgy Div.

Static and Dynamic Strength Tests on Electrical Conductor Cables Specified for Airport Landing Structures.

Final rept.

R. J. Fields, S. R. Low, and D. E. Harne. 27 Oct 88, 82p NISTIR-88-3884

Sponsored by Federal Aviation Administration, Washington, DC. Navigation and Landing Div.

PB92-112580 PC A06/MF A02 National Inst. of Standards and Technology (NCSL), Gaithersburg, MD.

Prototyping the IRDS: An Airport Application.

A. P. Sani. Oct 91, 119p NISTIR-4688

See also PB89-136329. Sponsored by Univ. of Toronto, Mississauga (Ontario). Inst. for Land Information Management.

## **Spacecraft Trajectories & Flight** Mechanics

Not available NTIS National Inst. of Standards and Technology (NML), Boulder, CO. Quantum Physics Div.

Orbit Determination and Gravitational Field Accuracy for a Mercury Transponder Satellite. Final rept.

M. A. Vincent, and P. L. Bender. 1990, 5p Grant NAGW-822

Sponsored by National Aeronautics and Space Admin-

istration, Washington, DC. Pub. in Jnl. of Geophysical Research 95, nB13 p21,357-21,361, 10 Dec 90.

## **Unmanned Spacecraft**

Not available NTIS National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Scientific Computing Div. Probe Waveforms and the Reconstruction of Structural Dynamic Green's Functions.

A. S. Carasso. 1991, 5p Contracts AFOSR-ISSA-88-0036, ONR-N00014-89-F-

Sponsored by Air Force Office of Scientific Research, Bolling AFB, DC., and Office of Naval Research, Arlington, VA.

Pub. in AIAA Jnl. 29, n1 p114-118 Jan 91.

### Railroad Transportation

PB91-222653 PC A03/MF A01

National Inst. of Standards and Technology (MSEL), Boulder, CO. Materials Reliability Div.

Residual Stress Detection in Railroad Wheels: An Ultrasonic System Using EMATs (Electromagnetic-Acoustic Transducers). Report No. 23.

Final rept. Sep 85-Dec 90.

R. E. Schramm, A. V. Clark, D. V. Mitrakovic, S. R. Schaps, and T. J. McGuire. May 91, 47p NISTIR-3968

Contract DTFR-53-89-X-00018

See also PB91-222661. Sponsored by Federal Railroad Administration, Washington, DC. Office of Research and Development.

PB91-222661 PC A04/MF A01 National Inst. of Standards and Technology (MSEL), Boulder, CO. Materials Reliability Div.

## **TRANSPORTATION**

## **Railroad Transportation**

Tread Crack Detection in Raiiroad Wheels: An Ultrasonic System Using EMATs (Electromagnetic-Acoustic Transducers), Report No. 22.
Final rept. Sep 85-Dec 90.
R. E. Schramm, A. V. Clark, D. V. Mitrakovic, Y.
Cohen, P. J. Schull, and S. R. Schaps. May 91, 69p
NISTIR-3967

NISTIR-3967
Contract DTFR-53-89-X-00018
See also PB91-222653. Sponsored by Department of Transportation, Federal Railroad Administration, Washington, DC. Office of Research and Development

## **Road Transportation**

PB91-157156 PC A03/MF A01 National Inst. of Standards and Technology (NEL), Gaithersburg, MD. Robot Systems Div. New Approach to Vision and Control for Road Following.

D. Raviv, and M. Herman. Jan 91, 46p NISTIR-4476
Prepared in cooperation with Florida Atlantic Univ., Boca Raton.

## **ALABAMA**

## Auburn

Auburn University Ralph Brown Draughon Library (1873)

## **Birmingham**

Birmingham Public Library (1895)
Birmingham-Southern College Library (1932)
Jefferson State Community College James B. Allen Library (1970)
Samford University Library Harwell G. Davis Library (1884)

## Enterprise

Enterprise State Junior College Learning Resources Center (1967)

## Fayette

Brewer State Junior College Learning Resources Center Library (1979)

#### Florence

University of North Alabama Collier Library (1932)

#### Gadsden

Gadsden Public Library (1963)

#### Huntsville

University of Alabama in Huntsville Library (1964)

#### Jacksonville

Jacksonville State University Houston Cole Library (1929)

#### Mobile

Mobile Public Library (1963) Spring Hill College Thomas Byrne Memorial Library (1937) University of South Alabama Library (1968)

## Montgomery

Alabama Public Library Service (1984)
Alabama Supreme Court and State Law Library (1884)
Auburn University at Montgomery Library (1971) REGIONAL
Air University Library Maxwell Air Force Base (1963)

#### Normai

Alabama Agricultural and Mechanical University J. F. Drake Memorial Learning Resources Center (1963)

### Troy

Troy State University Library (1963)

## Tuscaloosa

University of Alabama Amelia Gayle Gorgas Library (1860) REGIONAL University of Alabama School of Law Library (1967)

## Tuskegee

Tuskegee University Hollis Burke Frissell Library (1907)

## **ALASKA**

## Anchorage

Anchorage Law Library (1973)
Anchorage Municipal Libraries Z. J. Loussac Public Library (1978)
University of Alaska at Anchorage Library (1961)
U.S. Alaska Resources Library (1981)
U.S. District Court Law Library (1983)

## **Fairbanks**

University of Alaska Elmer E. Rasmuson Library (1922)

## Juneau

Alaska State Library (1900) University of Alaska-Juneau Library (1981)

#### Ketchikan

Ketchikan College Library (1970)

## **AMERICAN SAMOA**

## Pago Pago

American Samoa Community College Learning Resources Center (1985)

## ARIZONA

## Coolidge

Central Arizona College Instructional Materials Center (1973)

## **Flagstaff**

Northern Arizona University Cline Library (1937)

#### Glendale

Glendale Public Library (1986)

#### Holbrook

Northland Pioneer College Learning Resources Center (1985)

#### Mesa

Mesa Public Library (1983)

#### Phoenix

Department of Library Archives, and Public Records (unknown) REGIONAL Grand Canyon University Fleming Library (1978) Phoenix Public Library (1917) U.S. Court of Appeals 9th Circuit Library (1984)

#### Prescott

Yavapai College Library (1976)

## Tempe

Arizona State University College of Law Library (1977) Arizona State University Hayden Library (1944)

#### Tucson

Tucson Public Library (1970) University of Arizona Library (1907) REGIONAL

#### Yuma

Yuma County Library (1963)

#### **ARKANSAS**

## Arkadelphla

Ouachita Baptist University Riley Hickingbotham Library (1963)

#### **Batesville**

Arkansas College Library (1963)

## Clarksville

University of the Ozarks Dobson Memorial Library (1925)

## Conway

Hendrix College Olin C. Bailey Library (1903)

## **Fayetteville**

University of Arkansas Mullins Library (1907) University of Arkansas School of Law Library Robert A. Leflar (1978)

#### Little Rock

Arkansas State Library (1978) REGIONAL
Arkansas Supreme Court Library (1962)
Central Arkansas Library System Main Library (1953)
University of Arkansas at Little Rock Library Ottenheimer Library (1973)
University of Arkansas at Little Rock Pulaski County Law Library
(1979)

## Magnolla

Southern Arkansas University Magale Library (1956)

#### Monticello

University of Arkansas at Monticello Library (1956)

#### Pine Bluff

University of Arkansas at Pine Bluff Watson Memorial Library (1976)

### Russellville

Arkansas Technical University Tomlinson Library (1925)

## Searcy

Harding University Brackett Library (1963)

## State University

Arkansas State University Dean B. Ellis Library (1913)

#### Walnut Ridge

Southern Baptist College Felix Goodson Library (1967)

## **CALIFORNIA**

## Anahelm

Anaheim Public Library (1963)

## Arcadia

Arcadia Public Library (1975)

## Arcata

Humboldt State University Library (1963)

## **Bakersfleld**

California State University Bakersfield Library (1974) Kern County, Beale Memorial Library (1943)

## Berkeley

University of California General Library (1907) University of California Boalt Law Library (1963)

#### Carson

California State University Dominguez Hills Library (1973) Carson Regional Library (1973)

## Chico

California State University, Chico Mernam Library (1962)

## Claremont

Government Publications and Microforms Department Honnold Library, Claremont College (1913)

## Compton

Compton Public Library (1972)

## **Culver City**

Culver City Public Library (1966)

#### Davis

University of California Shields Library (1953) University of California at Davis Law Library (1972)

## Downey

Downey City Library (1963)

#### Fresno

California State University, Fresno, Henry Madden Library (1962) Government Documents Department Library (1920)

## **Fullerton**

California State University at Fullerton Library (1963)

#### **Garden Grove**

Orange County Public Library (1963)

#### Gardena

County of Los Angeles Public Library (1966)

## Hayward

California State University, Hayward Library (1963)

## **Huntington Park**

Huntington Park Library (1970)

#### Inglewood

Inglewood Public Library (1963)

## irvine

University of California at Irvine Main Library (1963)

## La Jolla

University of California at San Diego Central University Library (1963)

## Lakewood

Angelo Iacoboni Public Library (1970)

#### Lancaster

Lancaster Library (1967)

## La Verne

University of La Verne College of Law Library (1979)

## Long Beach

California State University at Long Beach Library (1962) Long Beach Public Library (1933)

## Los Angeles

California State University, Los Angeles University Library (1956)
Los Angeles County Law Library (1963)
Los Angeles Public Library (1891)
Loyola Marymount University Charles Von der Ahe Library (1933)
Loyola Law School William M. Rains Law Library (1979)
Occidental College Library (1941)
Southwestern University School of Law Library (1975)
University of California, University Research Library (1932)
University of Southern California Doheny Memorial Library (1933)
University of Southern California Law Library (1978)
U.S. Court of Appeals Ninth Circuit Library (1981)
Whittier College School of Law Library (1978)

## Mallbu

Pepperdine University Payson Library (1963)

## Menlo Park

U.S. Geological Survey Library (1962)

## Montebello

Montebello Regional Library (1966)

#### Monterey

U.S. Naval Postgraduate School Dudley Knox Library (1963)

## Monterey Park

Bruggemeyer Memorial Library (1964)

## Northridge

California State University at Northridge Oviatt Library (1958)

#### Norwalk

Norwalk Regional Library (1973)

#### Oakland

Mills College Library (1966) Oakland Public Library (1923)

#### Ontario

Ontario City Library (1974)

## Palm Springs

Palm Springs Public Library (1980)

## **Pasadena**

California Institute of Technology Millikan Memorial Library (1933) Pasadena Public Library (1963)

#### Pleasant Hill

Contra Costa County Library (1964)

## Redding

Shasta County Library (1956)

### Redlands

University of Redlands Armacost Library (1933)

## **Redwood City**

Redwood City Public Library (1966)

### Reseda

West Valley Regional Branch Library (1966)

## Richmond

Richmond Public Library (1943)

#### Riverside

Riverside City and County Public Library (1947) University of California at Riverside Library (1963)

#### Sacramento

California State Library (1895) REGIONAL
California State University Sacramento Library (1963)
Sacramento County Law Library (1963)
Sacramento Public Library (1880)
University of the Pacific McGeorge School of Law Library (1978)

## San Bernardino

Don A. Turner County Law Library (1984) San Bernardino County Library (1964)

#### San Diego

National University Law Library (1989)
San Diego County Law Library (1973)
San Diego County Library (1973)
San Diego Public Library (1895)
San Diego State University Library (1962)
University of San Diego Legal Research Center (1967)

#### San Francisco

Golden Gate University School of Law Library (1979)

University of California Hastings College of Law Library (1972) San Francisco Public Library (1889) San Francisco State University J. Paul Leonard Library (1955) Supreme Court of California Library (1979) U.S. Court of Appeals Ninth Circuit Library (1971) University of San Francisco Richard A. Gleeson Library (1963)

## San Jose

San Jose State University Clark Library (1962)

## San Leandro

San Leandro Community Library Center (1961)

## San Luis Obispo

California Polytechnic State University Robert E. Kennedy Library (1969)

## San Mateo

College of San Mateo Library (1987)

#### San Rafael

Mann County Free Library (1975)

#### Santa Ana

Orange County Law Library (1975) Santa Ana Public Library (1959)

#### Santa Barbara

University of California at Santa Barbara Library (1960)

## Santa Clara

Santa Clara University Orradre Library (1963)

#### Santa Cruz

University of California at Santa Cruz McHenry Library (1963)

#### Santa Rosa

Sonoma County Library (1896)

## Stanford

Stanford University Libraries (1895) Stanford University Robert Crown Law Library (1978)

#### Stockton

Public Library of Stockton and San Joaquin County (1884)

## **Thousand Oaks**

California Lutheran University Pearson Library (1964)

### **Torrance**

Torrance Public Library (1969)

### Turlock

California State University, Stanislaus Library (1964)

## **Vallejo**

Solano County Library John F. Kennedy Library (1982)

#### Valencia

Valencia Regional Library (1972)

## Ventura

Ventura County Library Services Agency (1975)

#### Visalia

Tulare County Free Library (1967)

#### Walnut

Mount San Antonio College Library (1966)

## West Covina

West Covina Regional Library (1966)

#### Whittler

Whittier College Wardman Library (1963)

## **COLORADO**

## Alamosa

Adams State College Library (1963)

## Aurora

Aurora Public Library (1984)

#### Boulder

University of Colorado at Boulder Norlin Library (1879) REGIONAL University of Colorado School of Law Library (1988)

## Colorado Springs

Colorado College Tutt Library (1880) University of Colorado at Colorado Springs Library (1974) U.S. Air Force Academy Library (1956)

## Denver

Auraria Library (1978)
Colorado Supreme Court Library (1978)
Denver Public Library (1884) REGIONAL
Department of the Interior Library (1962)
Regis College Dayton Memorial Library (1915)
U.S. Courts Library (1973)

University of Denver Penrose Library (1909)
University of Denver College of Law Westminster Law Library (1978)

#### Fort Collins

Colorado State University Libraries (1907)

#### Golden

Colorado School of Mines Arthur Lakes Library (1939)

## **Grand Junction**

Mesa State College Tomlinson Library (1978) Mesa County Public Library (1975)

## Greeley

University of Northern Colorado James A. Michener Library (1966)

#### Gunnison

Western State College Leslie J. Savage Library (1932)

## La Junta

Otero Junior College Wheeler Library (1963)

#### Lakewood

Jefferson County Public Library Lakewood Library (1968)

#### Pueblo

Pueblo Library District (1893) University of Southern Colorado Library (1965)

## CONNECTICUT

## **Bridgeport**

Bridgeport Public Library (1884)
University of Bridgeport School of Law Library Wahlstrom Library (1979)

## Danbury

Western Connecticut State University Ruth A. Haas Library (1967)

## Danlelson

Quinebaug Valley Community College Audrey P. Beck Library (1968)

## Enfleid

Enfield Central Library (1967)

## Hartford

Connecticut State Library (unknown) REGIONAL Hartford Public Library (1945)

Trinity College Library (1895) University of Connecticut School of Law Library (1978)

## Middletown

Wesleyan University Olin Library (1906)

## Mystic

Mystic Seaport Museum, Inc., G. W. Blunt White Library (1964)

## **New Britain**

Central Connecticut State University Elihu Burritt Library (1973)

## New Haven

Southern Connecticut State University Hilton C. Buley Library (1968) Yale Law Library (1981) Yale University Seeley G. Mudd Library (1859)

## **New London**

Connecticut College C. E. Shain Library (1926) U.S. Coast Guard Academy Library (1939)

#### Stamford

Ferguson Library (1973)

#### Storrs

University of Connecticut Homer Babbidge Library (1907)

## Waterbury

Post College Traurig Library and Learning Resources Center (1977) Silas Bronson Public Library (1869)

#### West Haven

University of New Haven Marvin K. Peterson Library (1971)

## DELAWARE

#### Dover

State Law Library in Kent County (unknown)

## Georgetown

Delaware Technical and Community College Southern Campus Library (1968)

## Newark

University of Delaware Library (1907)

## Wilmington

Widerne University School of Law Library (1976)

#### DISTRICT OF COLUMBIA

## WashIngton

Administrative Conference of the United States Library (1972) Advisory Commission on Intergovernmental Relations Library (1977) American University Washington College of Law Library (1983) Catholic University of America Robert J. White Law Library (1979)

Comptroller of the Currency Library (1986)

Pentagon Library (1969)

Department of Commerce Library (1955)

Department of Education (1988)

Department of Health and Human Services Library and Information Center (1954)

Department of Housing and Urban Development Library (1969) Department of the Interior Natural Resources Library (1895)

Department of Justice Main Library (1895) Department of Labor Library (1976)

Department of the Navy Library (1895) Department of State Library (1895)

Department of State Law Library (1966)

Department of Transportation Main Library (1982)

Department of Transportation, U.S. Coast Guard Law Library (1982)

Department of Veteran's Affairs Library (1967) Department of the Treasury Library (1895)

District of Columbia Court of Appeals Library (1981)

District of Columbia Public Library (1943)

Equal Employment Opportunity Commission Library (1984) Executive Office of the President, Library & Information Service Division (1965)

Federal Deposit Insurance Corporation Library (1972) Federal Election Commission Law Library (1975) Federal Energy Regulatory Commission Library (1983)

Federal Mine Safety & Health Review Commission Library (1979) Federal Reserve System Board of Governors Research Library (1978)

Federal Reserve System Law Library (1976)

General Accounting Office Office of Library Services (1974)

General Services Administration Library (1975)

Georgetown University Library (1969)

Georgetown University Law Center Edward Bennett Williams Library

George Washington University Melvin Gelman Library (1983)

George Washington University National Law Center Jacob Burns Law Library (1978)

Library of Congress Congressional Research Service (1978) Library of Congress Serial and Government Publications (1977)

Merit Systems Protection Board Library (1979)

National Defense University Library (1895)

Pension Benefit Guaranty Corporation Legal Dept. Library (1984)

U.S. Court of Appeals Judges' Library (1975)

U.S. Court of Appeals for the Federal Circuit Library (1986) U.S. Information Agency Library (1984)

U.S. Office of Personnel Management Library (1963)

U.S. Postal Service Library (1895)

U.S. Senate Library (1979)

U.S. Supreme Court Library (1978)

University of the District of Columbia Library Learning Resources Division (1970)

Veterans' Administration Central Office Library (1967)

#### **FLORIDA**

## **Boca Raton**

Florida Atlantic University S. E. Wimberly Library (1963)

## Casselberry

Seminole County Public Library (1989)

#### Coral Gables

University of Miami Otto G. Richter Library (1939)

## **Daytona Beach**

Volusia County Library Center (1963)

#### De Land

Stetson University duPont-Ball Library (1887)

#### Fort Lauderdale

Broward County Main Library (1967) Nova University Law Library (1967)

## **Fort Plerce**

Indian River Community College Library (1975)

### Galnesville

University of Florida College of Law Library (1978) University of Florida Libraries (1907) REGIONAL

#### Jacksonville

Haydon Burns Public Library (1914)
Jacksonville University Swisher Library (1962)
University of North Florida Thomas G. Carpenter Library (1972)

## **Key West**

Florida Keys Community College Key West Campus Library (1989)

## Lakeland

Lakeland Public Library (1928)

## Leesburg

Lake-Sumter Community College Library (1963)

## Melbourne

Florida Institute of Technology Library (1963)

#### Mlami

Florida International University Library Tamiami Trail (1970) Miami-Dade Public Library (1952)

## North Mlaml

Florida International University Bay Vista Campus Library (1977)

## Opa Locka

St. Thomas University Library (1977)

#### Orlando

University of Central Florida Library (1966)

#### **Palatka**

Saint Johns River Community College Library (1963)

## Panama City

Bay County Public Library (1983)

#### Pensacola

University of West Florida John C. Pace Library (1966)

#### **Port Charlotte**

Charlotte-Glades Library System (1973)

## Saint Petersburg

Saint Petersburg Public Library (1965) Stetson University College of Law Charles A. Dana Law Library (1975)

#### Sarasota

Selby Public Library (1970)

State Library of Florida (1929)

## Tallahassee

Florida Agricultural and Mechanical University Coleman Memorial Library (1936) Florida State University Law Library (1978) Florida State University Strozier Library (1941) Florida Supreme Court Library (1974)

## Tampa

Tampa-Hillsborough County Public Library (1965) University of South Florida Library (1962) University of Tampa Merl Kelce Library (1953)

## Winter Park

Rollins College Olin Library (1909)

#### **GEORGIA**

## Albany

Dougherty County Public Library (1964)

#### **Americus**

Georgia Southwestern College James Earl Carter Library (1966)

## Athens

University of Georgia Libraries (1907) REGIONAL University of Georgia School of Law Library (1979)

#### Atlanta

Atlanta-Fulton Public Library (1880)
Atlanta University Center Robert W. Woodruff Library (1962)
Emory University Law School Library (1968)
Emory University Woodruff Library (1928)
Georgia Institute of Technology Price Gilbert Memorial Library (1963)
Georgia State Law Library (unknown)
Georgia State University William Russell Pullen Library (1970)
Georgia State University College of Law Library (1983)
U.S. Court of Appeals 11th Circuit Library (1980)

## Augusta

Augusta College Reese Library (1962) Medical College of Georgia Library (1986)

#### Brunswick

Brunswick-Glynn County Regional Library (1965)

## Carrollton

West Georgia College Irvine Sullivan Ingram Library (1962)

#### Columbus

Columbus College Simon Schwob Memorial Library (1975)

## Dahlonega

North Georgia College Stewart Library (1939)

## Dalton

Dalton College Library (1978)

## Macon

Mercer University Stetson Main Library (1964) Mercer University Walter F. George School of Law Library (1978)

## Marletta

Kennesaw State College Horace W. Sturgis Library (1968)

## Milledgeville

Georgia College Ina Dillard Russell Library (1950)

## Rome

Berry College Memorial Library (1970)

## Savannah

Chatham-Effingham Liberty Regional Library (1857)

#### Statesboro

Georgia Southern University Zach S. Henderson Library (1939)

#### Valdosta

Valdosta State College Library (1956)

#### **GUAM**

## Agana

Nieves M. Flores Memorial Library (1962)

## Mangliao

University of Guarn Robert F. Kennedy Memorial Library (1978)

## HAWAII

## HIIO

University of Hawaii at Hilo Edwin H. Mookini Library (1962)

#### Honolulu

Hawaii Medical Library Incorporated (1968)
Hawaii State Library (1929)
Municipal Reference & Records Center (1965)
Supreme Court Law Library (1973)
University of Hawaii Hamilton Library (1907) REGIONAL
University of Hawaii William S. Richardson School of Law Library (1978)

#### Lale

Joseph F. Smith Library Brigham Young University Hawaii Campus (1964)

#### Lihue

Lihue Public Library (1967)

## **Pearl City**

Leeward Community College Library (1967)

#### Walluku

Maui Public Library (1962)

## IDAHO

## Boise

Boise Public Library and Information Center (1929) Boise State University Library (1966) Idaho State Law Library (unknown) Idaho State Library (unknown)

## Caldwell

College of Idaho Terteling Library (1930)

## Crawfordsville

Wabash College Lily Library

#### Moscow

University of Idaho College of Law Library (1978) University of Idaho Library (1907) REGIONAL

## Nampa

Northwest Nazarene College John E. Riley Library (1984)

#### **Pocatello**

Idaho State University Eli Oboler Library (1908)

## Rexburg

Davis O. McKay Library (1946)

#### Twin Falls

College of Southern Idaho Library (1970)

## **ILLINOIS**

## **Bloomington**

Illinois Wesleyan University, Sheean Library (1964)

## Carbondale

Southern Illinois University at Carbondale Morris Library (1932) Southern Illinois University School of Law Library (1978)

## Carlinville

Blackburn College Lumpkin Library (1954)

## Carterville

Shawnee Library System (1971)

## Champalgn

University of Illinois Law Library (1965)

## Charleston

Eastern Illinois University Booth Library (1962)

## Chicago

Chicago Public Library (1876)

Chicago State University Paul and Emily Douglas Library (1954)

DePaul University Law Library (1979)

Field Museum of Natural History Library (1963)

Illinois Institute of Technology Chicago-Kent College of Law Library (1978)

Illinois Institute of Technology Paul V. Galvin Library (1982)

John Marshall Law School Library (1981)

Loyola University of Chicago E. M. Cudahy Memorial Library (1966)

Loyola University School of Law Library (1979) Northeastern Illinois University Ronald Williams Library (1961)

Northwestern University School of Law Library (1978)

University of Chicago Law Library (1964)

University of Chicago Library (1897)

University of Illinois at Chicago Library (1957) William J. Campbell Library of the U.S. Courts (1979)

#### Decatur

Decatur Public Library (1954)

#### De Kalb

Northern Illinois University Founders' Memorial Library (1960) Northern Illinois University College of Law Library (1978)

#### **Des Plaines**

Government Information Center and The Northwest Municipal Conference Oakton Community College Library (1976)

## Edwardsville

Southern Illinois University at Edwardsville Lovejoy Memorial Library (1959)

#### Elsah

Principia College Marshall Brooks Library (1957)

#### Evanston

Northwestern University Library (1876)

#### Freeport

Freeport Public Library (1905)

#### Galesburg

Galesburg Public Library (1896)

## Jacksonville

MacMurray College Henry Pfeiffer Library (1929)

## Kankakee

Olivet Nazarene University Bonner Library and Learning Center (1946)

#### Lake Forest

Lake Forest College Donnelley Library (1962)

## Lebanon

McKendree College Holman Library (1968)

## Lisle

Illinois Benedictine College Theodore F. Lownik Library (1911)

#### Macomb

Western Illinois University Government Publications & Legal Reference Library (1962)

## Moline

Black Hawk College Learning Resources Center (1970)

Monmouth

Monmouth College Hewes Library (1860)

**Mount Carmel** 

Wabash Valley College Bauer Media Center (1975)

**Mount Prospect** 

Mount Prospect Public Library (1977)

Normal

Illinois State University Milner Library (1877)

Oak Park

Oak Park Public Library (1963)

Oglesby

Illinois Valley Community College Jacobs Memorial Library (1976)

Palos Hills

Moraine Valley Community College Learning Resources Center (1972)

Peorla

Cullom-Davis Library (1963) Peoria Public Library (1883)

River Forest

Rosary College Rebecca Crown Library (1966)

Rockford

Rockford Public Library (1895)

Romeoville

Lewis University Library (1952)

South Holland

South Suburban College Learning Resources Center

Springfield

Illinois State Library (unknown) REGIONAL

Streamwood

Poplar Creek Public Library (1980)

University Park

Governors' State University Library (1974)

Urbana

University of Illinois Documents Library (1907)

Wheaton

Wheaton College Buswell Memorial Library (1964)

Woodstock

Woodstock Public Library (1963)

INDIANA

Anderson

Anderson College Charles E. Wilson Library (1959)

Anderson Public Library (1983)

Bloomington

Indiana University Library (1881) Indiana University Law Library (1978)

Crawfordsville

Wabash College Lilly Library (1906)

Evansville

Evansville and Vanderburgh County Public Library (1928) University of Southern Indiana Library Services (1969)

Fort Wayne

Allen County Public Library (1896) Indiana University-Purdue University at Fort Wayne (1965)

Franklin

Franklin College Library (1976)

Gary

Gary Public Library (1943) Indiana University Northwest Library (1966)

Greencastle

De Pauw University Roy O. West Library (1879)

Hammond

Hammond Public Library (1964)

Hanover

Hanover College Duggan Library (1892)

Huntington

Huntington College Richlyn Library (1964)

Indianapolis

Butler University Irwin Library (1965) Indianapolis-Marion County Public Library (1906) Indiana State Library (unknown) REGIONAL Indiana Supreme Court Law Library (1975) Indiana University School of Law Library (1967) Indiana University-Purdue University Library (1979)

#### Kokomo

Indiana University at Kokomo Learning Resource Center (1969)

#### Muncle

Ball State University Alexander M. Bracken Library (1959) Muncie Public Library (1906)

## **New Albany**

Indiana University Southeast Library (1965)

#### **Notre Dame**

Notre Dame Law School Kresge Law Library (1985) University of Notre Dame Hesburgh Library (1883)

#### Rensselaer

Saint Joseph's College Library (1964)

#### Richmond

Earlham College Lilly Library (1964) Morrison-Reeves Library (1906)

## South Bend

Indiana University at South Bend Franklin D. Schurz Library (1965)

#### **Terre Haute**

Indiana State University Cunningham Memorial Library (1906)

## Valparaiso

Valparaiso University Moellering Memorial Library (1930) Valparaiso University Law Library (1978)

#### West Lafayette

Purdue University Libraries (1907)

## IOWA

## Ames

Iowa State University Parks Library (1907)

## Cedar Fails

University of Northern Iowa Donald O. Rod Library (1946)

## Cedar Rapids

Cedar Rapids Public Library (1986)

## Council Bluffs

Free Public Library (1885) Iowa Western Community College Herbert Hoover Library (1972)

### Davenport

Davenport Public Library (1973)

## **Des Moines**

Drake University Cowles Library (1966) Drake University Law Library (1972) Public Library of Des Moines (1888) State Library of Iowa (unknown)

## Dubuque

Camegie-Stout Public Library (unknown) Loras College Wahlert Memorial Library (1967)

## **Fayette**

Upper Iowa University Henderson-Wilder Library (1974)

#### Grinnell

Grinnell College Burling Library (1874)

## iowa City

University of Iowa College of Law Library (1968) University of Iowa Libraries (1884) REGIONAL

## Lamoni

Graceland College Frederick Madison Smith Library (1927)

## **Mason City**

North Iowa Area Community College Library (1976)

## **Mount Vernon**

Cornell College Russell D. Cole Library (1896)

#### Orange City

Northwestern College Ramaker Library (1970)

## Sloux City

Sioux City Public Library (1894)

#### KANSAS

#### Atchison

Benedictine College Library (1965)

## **Baidwin City**

Baker University Collins Library (1908)

## Colby

Colby Community College H. F. Davis Memorial Library (1968)

## **Emporla**

Emporia State University William Allen White Library (1909)

## Hays

Fort Hays State University Forsyth Library (1926)

#### Hutchinson

Hutchinson Public Library (1963)

#### Lawrence

University of Kansas Law Library (1971)
University of Kansas Map Library (1869) REGIONAL

#### Manhattan

Kansas State University Farrell Library (1907)

## **Plttsburg**

Pittsburg State University Leonard H. Axe Library (1952)

## Sallna

Kansas Wesleyan University Memorial Library (1930)

#### Shawnee Mission

Johnson County Library (1979)

## Topeka

Kansas State Historical Society Library (1877) Kansas State Library (unknown) Kansas Supreme Court Law Library (1975) Washburn University of Topeka Law Library (1971)

## Wichita

Wichita State University Ablah Library (1901)

## **KENTUCKY**

## **Ashland**

Ashland Community College Library (1946)

## Barbourville

Union College Abigail E. Weeks Memorial Library (1958)

## **Bowling Green**

Western Kentucky University Helm-Cravens Library (1934)

#### Columbia

Lindsey Wilson College Katie Murrell Library (1987)

#### Crestview Hills

Thomas More College Library (1970)

#### Danville

Centre College Grace Doherty Library (1884)

#### Frankfort

Kentucky Department of Libraries and Archives (1967) Kentucky State Law Library (unknown) Kentucky State University Blazer Library (1972)

#### Hazard

Hazard Community College Library (1988)

## **Highland Heights**

Northern Kentucky University W. Frank Steely Library (1973)

## Lexington

University of Kentucky Law Library (1968) University of Kentucky Libraries (1907) REGIONAL

## Louisville

Louisville Free Public Library (1904) University of Louisville Ekstrom Library (1925) University of Louisville Law Library (1975)

## Morehead

Morehead State University Camden-Carroll Library (1955)

## Murray

Murray State University Waterfield Library (1924)

## Owensboro

Kentucky-Wesleyan College Library Learning Center (1966)

## Richmond

Eastern Kentucky University John Grant Crabbe Library (1966)

## Williamsburg

Cumberland College Norma Perkins Hagan (1988)

#### LOUISIANA

## Baton Rouge

Louisiana State Library (1976) Louisiana State University Middleton Library (1907) REGIONAL Louisiana State University Paul M. Hebert Law Center Library (1929) Southern University John B. Cade Library (1952) Southern University Law School Library (1979)

## Eunice

Louisiana State University at Eunice LeDoux Library (1969)

## Hammond

Southeastern Louisiana University Sims Memorial Library (1966)

## Lafayette

University of Southwestern Louisiana Dupre Library (1938)

## Lake Charles

McNeese State University Lether E. Frazar Memorial Library (1941)

#### Monroe

Northeast Louisiana University Sandel Library (1963)

#### **Natchitoches**

Northwestern State University Watson Memorial Library (1887)

## **New Orleans**

Law Library of Louisiana (unknown)
Loyola University Government Documents Library (1942)
Loyola University Law Library (1978)
New Orleans Public Library (1883)

Our Lady of Holy Cross College Library (1968)

Southern University in New Orleans Leonard S. Washington Memorial Library (1962)

Tulane University Law Library (1976)

Tulane University Howard-Tilton Memorial Library (1942)

U.S. Court of Appeals 5th Circuit Library (1973)

University of New Orleans Earl K. Long Library (1963)

#### Pineville

Louisiana College Richard W. Norton Memorial Library (1969)

#### Ruston

Louisiana Technical University Prescott Memorial Library (1896) REGIONAL

## Shreveport

Louisiana State University at Shreveport Library (1967) Shreve Memorial Library (1923)

## Thibodaux

Nicholls State University Ellender Memorial Library (1962)

## MAINE

## **Augusta**

Maine Law and Legislative Reference Library (1973)
Maine State Library (unknown)

#### Bangor

Bangor Public Library (1884)

#### Brunswick

Bowdoin College Library (1884)

### Castine

Maine Maritime Academy Nutting Memorial Library (1969)

## Lewiston

Bates College George and Helen Ladd Library (1883)

#### Orono

University of Maine Raymond H. Fogler Library (1907) REGIONAL

#### **Portland**

Portland Public Library (1884) University of Maine School of Law Garbrecht Law Library (1964)

## Presque Isle

University of Maine at Presque Isle Library/Learning Resources Center (1979)

#### Sanford

Louis B. Goodall Memorial Library (1984)

#### Waterville

Colby College Miller Library (1884)

#### MARYLAND

## Annapolis

Maryland State Law Library (unknown) U.S. Naval Academy Nimitz Library (1895)

## Baltimore

Enoch Pratt Free Library (1887)
Johns Hopkins University Milton S. Eisenhower Library (1882)
Morgan State University Soper Library (1940)
University of Baltimore Langsdale Library (1973)
University of Baltimore Law Library (1980)
University of Maryland School of Law Marshall Law Library (1969)
U.S. Court of Appeals 4th Circuit Library (1982)

## Bel Air

Harford Community College Library (1967)

## Beltsville

Department of Agriculture National Agricultural Library (1895)

## Bethesda

Department of Health and Human Services National Library of Medicine (1978)

Uniformed Services University of Health Sciences Learning Resource Center (1983)

#### Catonsville

University of Maryland, Baltimore County Albin O. Kuhn Library & Gallery (1971)

#### Chestertown

Washington College Clifton M. Miller Library (1891)

## College Park

University of Maryland Hombake Library (1925) REGIONAL

#### Cumberland

Allegany Community College Library (1974)

## Frostburg

Frostburg State University Library (1967)

## Patuxent River

Patuxent River Central Library (1968)

#### Rockville

Montgomery County Department of Public Libraries (1951)

## Sallsbury

Salisbury State College Blackwell Library (1965)

## Towson

Goucher College Julia Rogers Library (1966) Towson State University Cook Library (1979)

## Westminster

Western Maryland College Hoover Library (1886)

## **MASSACHUSETTS**

#### **Amherst**

Amherst College Library (1884) University of Massachusetts University Library (1907)

## **Boston**

Boston Athenaeum Library (unknown)
Boston Public Library (1859) REGIONAL
Boston University School of Law (1979)
Northeastern University Snell Library (1962)
State Library of Massachusetts (unknown)
Suffolk University Law Library (1979)
Supreme Judicial Court Social Law Library (1979)
U.S. Court of Appeals First Circuit Library (1978)

## Brookline

Public Library of Brookline (1925)

## Cambridge

Harvard College Library (1860) Harvard Law School Library (1981) Massachusetts Institute of Technology Library (1946)

## Chestnut HIII

Boston College Thomas P. O'Neill Jr., Library (1963)

## Chicopee

College of Our Lady of the Elms Alumnae Library (1969)

#### Lowell

University of Lowell O'Leary Library (1952)

#### Medford

Tufts University Wessel Library (1899)

## Milton

Curry College Levin Library (1972)

## **New Bedford**

New Bedford Free Public Library (1858)

#### **Newton Centre**

Boston College Law School Library (1979)

## North Dartmouth

Southeastern Massachusetts University Library (1965)

## North Easton

Stonehill College Cushing-Martin Library (1962)

## Springfield

Springfield City Library (1966)
Western New England College School of Law Library (1978)

#### Waltham

Brandeis University Library (1965) Waltham Public Library (1982)

## Wellesley

Wellesley College Margaret Clapp Library (1943)

## Wenham

Gordon College Jenks Learning Resource Center (1963)

## Williamstown

Williams College Sawyer Library (unknown)

#### Worcester

American Antiquarian Society Library (1814) University of Massachusetts Medical Center Library (1972) Worcester Public Library (1859)

#### **MICHIGAN**

## Albion

Albion College Stockwell-Mudd Library (1966)

#### Allendale

Grand Valley State College Zumberge Library (1963)

#### Alma

Alma College Library (1963)

## Ann Arbor

University of Michigan Harlan Hatcher Graduate Library (1884) University of Michigan Law Library (1978)

#### **Benton Harbor**

Benton Harbor Public Library (1907)

## **Bloomfield Hills**

Cranbrook Institute of Science Library (1940)

#### Dearborn

Henry Ford Centennial Library (1969) Henry Ford Community College Library (1957)

#### Detroit

Detroit College of Law Library (1979)
Detroit Public Library (1868) REGIONAL
Marygrove College Library (1965)
Mercy College of Detroit Library (1965)
University of Detroit Library (1884)
University of Detroit School of Law Library (1978)
Wayne State University Purdy/Kresge Library (1937)
Wayne State University Arthur Neef Law Library (1971)

## Dowaglac

Southwestern Michigan College Matthews Library (1971)

## **East Lansing**

Michigan State University Government Documents Library (1907)

## Farmington Hills

Oakland Community College Martin L. King Learning Resources Center (1968)

#### Flint

Flint Public Library (1967) University of Michigan-Flint Library (1977)

## **Grand Rapids**

Calvin College & Seminary Library (1967) Grand Rapids Public Library (1876)

## Houghton

Michigan Technological University J. Robert Van Pelt Library (1876)

## Jackson

Jackson District Library (1965)

#### Kalamazoo

Kalamazoo Public Library (1907) Western Michigan University Dwight B. Waldo Library (1963)

## Lansing

Library of Michigan (unknown) REGIONAL Thomas M. Cooley Law School Library (1978)

#### Livonia

Livonia Public Library (1987) Schoolcraft College Library (1962)

## **Madison Heights**

Madison Heights Public Library (1982)

## Marquette

Northern Michigan University Lydia M. Olson Library (1963)

#### Monroe

Monroe County Library System (1974)

## **Mount Clemens**

Macomb County Library (1968)

## Mount Pleasant

Central Michigan University Charles V. Park Library (1958)

## Muskegon

Hackley Public Library (1894)

## Petoskey

North Central Michigan College Library (1962)

## **Port Huron**

Saint Clair County Library (1876)

Rochester

Oakland University Kresge Library (1964)

Royal Oak

Royal Oak Public Library (1984)

Saginaw

Hoyt Public Library (1890)

Sault Ste. Marle

Lake Superior State University Kenneth Shouldice Library (1982)

**Traverse City** 

Northwestern Michigan College Mark and Helen Osterlin Library (1964)

**University Center** 

Delta College Library (1963)

Warren

Warren Public Library Arthur J. Miller Branch (1973)

Ypsilanti

Eastern Michigan University Library (1965)

**MICRONESIA** 

East Caroline Islands

Community College of Micronesia Library (1982)

MINNESOTA

Bemidji

Bemidji State University A.C. Clark Library (1963)

Blaine

Anoka County Library (1971)

Collegeville

Saint John's University Alcuin Library (1954)

Cottage Grove

Washington County Library-Park Grove Branch (1983)

Duluth

Duluth Public Library (1909) University of Minnesota Duluth Library (1984)

Eagan

Dakota County Library-Westcott Branch (1983)

Edina

Southdale-Hennepin Area Library (1971)

Mankato

Mankato State University Memorial Library (1962)

Marshall

Southwest State University Library (1986)

**Minneapolis** 

Minneapolis Public Library (1893)
University of Minnesota Law School Library (1978)
University of Minnesota Wilson Library (1907) REGIONAL

Moorhead

Moorhead State University Livingston Lord Library (1956)

Morris

University of Minnesota, Morris, Rodney A. Briggs Library (1963)

Northfield

Carleton College Library (1930) Saint Olaf College Rolvaag Memorial Library (1930)

Saint Cloud

Saint Cloud State University, Learning Rescources Center (1962)

Saint Paul

Hamline University School of Law Library (1978)
Minnesota Historical Society Library (1867)
Minnesota State Law Library (unknown)
Saint Paul Public Library (1914)
University of Minnesota Saint Paul Campus Library (1974)
William Mitchell College of Law Library (1979)

Saint Peter

Gustavus Adolphus College Fake Bernadette Memorial Library (1941)

Winona

Winona State University Maxwell Library (1969)

#### MISSISSIPPI

#### Cleveland

Delta State University W. B. Roberts Library (1975)

#### Columbus

Mississippi University for Women John Clayton Fant Memorial Library (1929)

# Hattlesburg

University of Southern Mississippi Joseph A. Cook Memorial Library (1935)

#### **Jackson**

Jackson State University Henry Thomas Sampson Library (1968)
Millsaps College Millsaps-Wilson Library (1963)
Mississippi College School of Law Library (1977)
Mississippi Library Commission (1947)
Mississippi State Law Library (unknown)

#### Lorman

Alcorn State University J. D. Boyd Library (1970)

# Mississippi State

Mississippi State University Mitchell Memorial Library (1907)

#### University

University of Mississippi J. D. Williams Library (1883) REGIONAL University of Mississippi James O. Eastland Law Library (1967)

# **MISSOURI**

#### Cape Girardeau

Southeast Missouri State University Kent Library (1916)

# Columbia

University of Missouri at Columbia Ellis Library (1862) REGIONAL University of Missouri-Columbia Law Library (1978)

#### Fulton

Westminster College Reeves Library (1875)

#### Hillsboro

Jefferson College Library (1984)

# Jefferson City

Lincoln University Inman E. Page Library (1944) Missouri State Library (1963) Missouri Supreme Court Library (unknown)

# Joplin

Missouri Southern State College George A. Spiva Library (1966)

# Kansas City

Kansas City Missouri Public Library (1881) Rockhurst College Greenlease Library (1917) University of Missouri at Kansas City General Library (1938) University of Missouri Kansas City Leon E. Bloch Law Library (1978)

#### Kirksville

Northeast Missouri State University Pickler Memorial Library (1966)

# Liberty

William Jewell College Charles F. Curry Library (1900)

# Maryville

Northwest Missouri State University B. D. Owens Library (1982)

#### Rolla

University of Missouri-Rolla Curtis Laws Wilson Library (1907)

# Saint Charles

Kisker Road Branch Library Lindenwood College Margaret Leggat Butler Library (1973)

#### Saint Joseph

River Bluffs Regional Public Library (1891)

#### Saint Louis

Maryville College Library (1976)
Saint Louis County Library (1970)
Saint Louis Public Library (1866)
Saint Louis University Law Library (1967)
Saint Louis University Pius XII Memorial Library (1866)
U.S. Court of Appeals Eighth Circuit Library (1972)
University of Missouri at Saint Louis Thomas Jefferson Library (1966)
Washington University John M. Olin Library (1906)
Washington University Law Library (1978)

# Springfield

Drury College, Walker Library (1874) Southwest Missouri State University Duane G. Meyer Library (1963)

# Warrensburg

Central Missouri State University Ward Edwards Library (1914)

# MONTANA

# Billings

Eastern Montana College Library (1958)

#### Bozeman

Montana State University Libraries (1907)

#### Butte

Montana College of Mineral Science and Technology Library (1901)

#### Havre

Northern Montana College Vande Bogart Library (1980)

#### Helena

Carroll College Corrette Library (1974) Montana State Library (1966) State Law Library of Montana (1977)

#### Missoula

University of Montana Maurene & Mike Mansfield Library (1909) REGIONAL

#### **NEBRASKA**

#### Blair

C. A. Dana College Dana-LIFE Library (1924)

#### Crete

Doane College Perkins Library (1944)

#### Fremont

Midland Lutheran College Luther Library (1924)

#### Kearney

Kearney State College Calvin T. Ryan Library (1962)

#### Lincoln

Nebraska Library Commission (1972) Nebraska State Library (unknown) University of Nebraska-Lincoln College of Law Library (1981) University of Nebraska-Lincoln D. L. Love Memorial Library (1907) REGIONAL

# Omaha

Creighton University Reinert/Alumni Library (1964) Creighton University School of Law Library (1979) Omaha Public Library W. Dale Clark Library (1880) University of Nebraska at Omaha University Library (1939)

# Scottsbluff

Scottsbluff Public Library (1925)

# Wayne

Wayne State College U.S. Conn Library (1970)

# **NEVADA**

# Carson City

Nevada State Library and Archives (unknown) Nevada Supreme Court Library (1973)

# Las Vegas

Clark County Law Library (1988) Las Vegas-Clark County Library (1974) University of Nevada at Las Vegas James Dickinson Library (1959)

#### Reno

National Judicial College Law Library (1979) Nevada Historical Society Library (1974) University of Nevada-Reno Library (1907) REGIONAL Washoe County Library (1980)

# **NEW HAMPSHIRE**

#### Concord

Franklin Pierce Law Center Library (1973) New Hampshire State Library (unknown)

#### Durham

University of New Hampshire Library (1907)

#### Hanover

Dartmouth College Library (1884)

#### Henniker

New England College Danforth Library (1966)

#### Manchester

Manchester City Library (1884) New Hampshire College H. A. B. Shapiro Memorial Library (1976) Saint Anselm College Geisel Library (1963)

# Nashua

Nashua Public Library (1971)

#### **NEW JERSEY**

Bayonne

Bayonne Free Public Library (1909)

Bloomfleld

Bloomfield Public Library (1965)

Bridgeton

Cumberland County Library (1966)

Camden

Rutgers University Camden Library (1966) Rutgers University School of Law Library (1979)

**Convent Station** 

College of Saint Elizabeth Mahoney Library (1938)

East Brunswick

East Brunswick Public Library (1977)

**East Orange** 

East Orange Public Library (1966)

Elizabeth

Free Public Library of Elizabeth (1895)

Glassboro

Glassboro State College Savitz Library (1963)

Hackensack

Johnson Free Public Library (1966)

Irvington

Irvington Public Library (1966)

**Jersey City** 

Jersey City Public Library (1879) Jersey City State College Forrest A. Irwin Library (1963)

Lawrenceville

Rider College Franklin F. Moore Library (1975)

Madison

Drew University Library (1939)

Mahwah

Ramapo College Library (1971)

**Mount Holly** 

Burlington County Library (1966)

**New Brunswick** 

Rutgers University Alexander Library (1907)

Newark

Newark Public Library (1906) REGIONAL Rutgers University John Cotton Dana Library (1966) Rutgers University Law Library (1979) Seton Hall University Law Library (1979)

Newton

Sussex County Library (1986)

**Passalc** 

Passaic Public Library (1964)

Phillipsburg

Phillipsburg Free Public Library (1976)

Plainfield

Plainfield Public Library (1971)

Pomona

Stockton State College Library (1972)

Princeton

Princeton University Firestone Library (1884)

Randolph

County College of Morris Sherman H. Masten Learning Resource Center (1975)

Rutherford

Fairleigh Dickinson University Messler Library (1953)

Shrewsbury

Monmouth County Library (1968)

South Orange

Seton Hall University Library (1947)

Teaneck

Fairteigh Dickinson University Welner Library (1963)

#### Toms River

Ocean County College Learning Resources Center (1966)

#### **Trenton**

New Jersey State Library (unknown) Trenton Free Public Library (1902)

#### Union

Kean College of New Jersey Nancy Thompson Library (1971)

# **Upper Montciair**

Montclair State College Harry A. Sprague Library (1967)

# Wayne

Wayne Public Library (1972)

# **West Long Branch**

Monmouth College Guggenheim Memorial Library (1963)

# Woodbridge

Woodbridge Public Library (1965)

#### **NEW MEXICO**

# Albuquerque

University of New Mexico Medical Center Library (1973) University of New Mexico School of Law Library (1973) University of New Mexico General Library (1896) REGIONAL

#### Hobbs

New Mexico Junior College Pannell Library (1969)

#### Las Cruces

New Mexico State University Library (1907)

# Las Vegas

New Mexico Highlands University Donnelly Library (1913)

#### **Portales**

Eastern New Mexico University Golden Library (1962)

### Santa Fe

New Mexico State Library (1960) REGIONAL New Mexico Supreme Court Law Library (unknown)

# Silver City

Western New Mexico University Miller Library (1972)

#### Socorro

New Mexico Institute of Mining & Technology Martin Speare Memorial Library (1984)

#### **NEW YORK**

# Albany

Albany Law School Schaffer Law Library (1979) New York State Library (unknown) REGIONAL State University of New York at Albany University Library (1964)

# **Auburn**

Seymour Library (1972)

# Beliport

East Islip Public Library (1973)

# **Binghamton**

State University of New York at Binghamton Glenn G. Bartle Library (1962)

# **Brockport**

State University of New York at Brockport Drake Memorial Library (1967)

## **Bronx**

Fordham University Library (1937)
Lehman College Library (1967)
New York Public Library (1973)
State University of New York Maritime College Stephen B. Luce Library (1947)

# Bronxviile

Sarah Lawrence College Esther Raushenbush Library (1969)

#### **Brooklyn**

Brooklyn College Library (1936)
Brooklyn Law School Library (1974)
Brooklyn Public Library Business Library (1984)
Brooklyn Public Library (1908)
Pratt Institute Library (1891)
State University of New York Health Center at Brooklyn Library (1958)

# Buffalo

Buffalo and Erie County Public Library (1895)
State University of New York at Buffalo Charles B. Sears Law Library (1978)
State University of New York at Buffalo Lockwood Memorial Library

### Canton

Saint Lawrence University Owen D. Young Library (1920)

(1963)

# Corning

Coming Community College Arthur A. Houghton Jr. Library (1963)

#### Cortland

State University of New York at Cortland Memorial Library (1964)

#### Deihi

State University College of Technology Resnick Library (1970)

#### Elmira

Elmira College Gannett Tripp Learning Center (1956)

# **Farmingdale**

State University of New York at Farmingdale Greenley Library (1917)

## Flushing

CUNY Law School at Queens College CUNY Law Library (1983) Queens College Benjamin S. Rosenthal Library (1939)

# Garden City

Adelphi University Swirbul Library (1966)

#### Geneseo

State University of New York at Geneseo Milne Library (1967)

#### Greenvale

Long Island University B. Davis Schwartz Memorial Library (1964)

#### Hamilton

Colgate University, Everett Needham Case Library (1902)

# Hempstead

Hofstra University Library (1964) Hofstra University School of Law Library (1979)

# Huntington

Touro College Jacob D. Fuchsberg Law Center Library (1985)

#### Ithaca

Cornell University Library (1907) Cornell Law Library (1978) Cornell University Albert R. Mann Library (1943)

#### **Jamaica**

Queens Borough Public Library (1926) Saint John's University Library (1956) Saint John's University School of Law Library (1978)

# Kings Point

U.S. Merchant Marine Academy Schuyler Otis Bland Library (1962)

# Long Island City

Fiorello H. LaGuardia Community College Library (1981)

#### Middletown

Thrall Library (1986)

# **Mount Vernon**

Mount Vernon Public Library (1962)

#### **New Paltz**

State University College at New Paltz Sojourner Truth Library (1965)

# **New York City**

City College of City University of New York Cohen Library (1884)
College of Insurance Library (1965)
Columbia University Libraries (1882)
Columbia University School of Law Library (1981)
Cooper Union for the Advancement of Science and Arts Library (1930)
Fordham Law School Library (1987)
Medical Library Center of New York (1976)
New York Law Institute Library (1909)
New York Law School Library (1979)
New York Public Library Astor Branch (1907)
New York Public Library Lenox Branch (1884)
New York University Law Library (1974)
New York University Elmer Holmes Bobst Library (1967)

#### Newburgh

Yeshiva University Chutick Law Library Cardozo School of Law (1979)

U.S. Court of Appeals Second Circuit Library (1976)

Yeshiva University Pollack Library (1979)

Newburgh Free Library (1909)

#### Niagara Falls

Niagara Falls Public Library (1976)

### Oakdale

Dowling College Library (1965)

# Oneonta

State University College at Onenonta James M. Milne Library (1966)

# Oswego

State University of New York at Oswego Penfield Library (1966)

# **Plattsburgh**

State University College at Plattsburgh Benjamin F. Feinberg Library (1967)

#### **Potsdam**

Clarkson University Harriet Call Burnap Memorial Library (1938) State University College of New York at Potsdam Frederick W. Crumb Memorial Library (1964)

# Poughkeepsle

Vassar College Library (1943)

#### **Purchase**

State University of New York at Purchase Library (1969)

#### Rochester

Rochester Public Library (1963) University of Rochester Rush Rhees Library (1880)

#### Saint Bonaventure

Saint Bonaventure University Friedsam Memorial Library (1938)

# Saratoga Springs

Skidmore College Library (1964)

# Schenectady

Union College Schaffer Library (1901)

# Southampton

Long Island University Southhampton Campus Library (1973)

# SparkIII

St. Thomas Aquinas College Lougheed Library (1984)

# Staten Island

Wagner College Hormann Library (1953)

# Stony Brook

State University of New York at Stony Brook Main Library (1963)

# Syracuse

Onondaga County Public Library (1978)
Syracuse University Library (1878)
Syracuse University College of Law H. Douglas Barclay Law Library (1978)

# Troy

Troy Public Library (1869)

#### Uniondale

Nassau Library System (1965)

#### Utica

Utica Public Library (1885) SUNY Institute of Technology Library (1977)

#### **West Point**

U.S. Military Academy Library (unknown)

#### White Plains

Pace University Law Library (1978)

#### **Yonkers**

Yonkers Public Library Getty Square Branch (1910)

# Yorktown Heights

Mercy College Library (1976)

# **NORTH CAROLINA**

### Asheville

University of North Carolina at Asheville D. Hiden Ramsey Library (1965)

# **Bolling Springs**

Gardner-Webb College Dover Memorial Library (1974)

#### Boone

Appalachian State University Carol Grotnes Belk Library (1963)

# **Bules Creek**

Campbell University Carrie Rich Memorial Library (1965)

# Chapel HIII

University of North Carolina at Chapel Hill Davis Library (1884) REGIONAL University of North Carolina at Chapel Hill Law Library (1978)

#### Charlotte

Public Library of Charlotte and Mecklenburg County (1964) Queens College Everett Library (1927) University of North Carolina at Charlotte Atkins Library (1964)

#### Cullowhee

Western Carolina University Hunter Library (1953)

#### Davidson

Davidson College Library (1893)

#### Durham

Duke University School of Law Library (1978)

Duke University William R. Perkins Library (1890)

North Carolina Central University Law School Library (1979)

North Carolina Central University James E. Shepard Memorial Library (1973)

# **Eion College**

Elon College Iris Holt McEwen Library (1971)

# **Fayetteville**

Fayetteville State University Charles W. Chesnutt Library (1971)

#### Greensboro

North Carolina Agricultural and Technical State University F. D. Bluford Library (1937) University of North Carolina at Greensboro Walter Clinton Jackson Library (1963)

#### Greenville

East Carolina University J. Y. Joyner Library (1951)

# Laurinburg

Saint Andrews Presbyterian College DeTamble Library (1969)

# Lexington

Davidson County Public Library (1971)

#### **Mount Olive**

Mount Olive College Moye Library (1971)

#### Pembroke

Pembroke State University Mary H. Livermore Library (1956)

# Raleigh

Department of Cultural Resources Division of State Library (unknown) North Carolina State University D. H. Hill Library (1923) North Carolina Supreme Court Library (1972)

#### **Rocky Mount**

North Carolina Wesleyan College Library (1969)

#### Salisbury

Catawba College Library (1925)

#### Wilmington

University of North Carolina at Wilmington William M. Randall Library (1965)

# Wilson

Barton College Hackney Library (1930)

#### Winston-Salem

Forsyth County Public Library (1954)
Wake Forest University School of Law Library (1902)

#### NORTH DAKOTA

#### **Bismarck**

North Dakota State Library (1971)
North Dakota Supreme Court Law Library (unknown)
State Historical Society of North Dakota State Archives & Historical
Research Library (1907)
Veterans' Memorial Public Library (1967)

#### Dickinson

Dickinson State University Stoxen Library (1968)

## Fargo

Fargo Public Library (1964) North Dakota State University Library (1907) REGIONAL

#### **Grand Forks**

University of North Dakota Chester Fritz Library (1890)

#### Minot

Minot State University Memorial Library (1925)

# **Valley City**

Valley City State University Allen Memorial Library (1913)

#### NORTHERN MARIANA ISLANDS

#### Salpan

Northern Marianas College Olympio T. Borja Memorial Library (1988)

#### OHIO

#### Ada

Ohio Northern University J. P. Taggart Law Library (1965)

#### Akron

Akron-Summit County Public Library (1952) University of Akron Bierce Library (1963) University of Akron School of Law Library (1978)

# **Alliance**

Mount Union College Library (1888)

#### **Ashland**

Ashland University Library (1938)

#### **Athens**

Ohio University Alden Library (1886)

#### Batavla

University of Cincinnati Clermont College Library (1973)

#### Bluffton

Bluffton College Musselman Library (1951)

# **Bowling Green**

Bowling Green State University Jerome Library (1933)

#### Canton

Malone College Everett L. Cattel Library (1970)

#### Chardon

Chardon Public Library (1971)

#### Cincinnati

Public Library of Cincinnati and Hamilton County (1884) University of Cincinnati Langsam Library (1929) University of Cincinnati College of Law Marx Law Library (1978) U.S. Court of Appeals 6th Circuit Library (1986)

#### Cleveland

Case Western Reserve University Freiberger Library (1913)
Case Western Reserve University School of Law Library (1979)
Cleveland Public Library (1886)
Cleveland State University Cleveland-Marshall College of Law,
Joseph W. Bartunek III Law Library (1978)
Cleveland State University Library (1966)
Municipal Reference Library (1970)

# Cleveland Heights

Cleveland Heights-University Heights Public Library (1970)

#### Columbus

Capital University Law School Library (1980)
Capital University Library (1968)
Columbus Metropolitan Library (1885)
Ohio State University College of Law Library (1984)
Ohio State University Libraries (1907)
Ohio Supreme Court Law Library (1973)
State Library of Ohio (unknown) REGIONAL

# **Dayton**

Dayton and Montgomery County Public Library (1909) University of Dayton Roesch Library (1969) Wright State University Library (1965)

#### Delaware

Ohio Wesleyan University L. A. Beeghly Library (1845)

#### Elyrla

Elyria Public Library (1966)

# **Findlay**

Findlay University of Shafer Library (1969)

#### Gambier

Kenyon College Library (1873)

#### Granville

Denison University Libraries William H. Doane Library (1884)

#### Hlram

Hiram College Teachout-Price Memorial Library (1874)

#### Kent

Kent State University Libraries (1962)

#### Marletta

Marietta College Dawes Memorial Library (1884)

#### Marion

Marion Public Library (1979)

#### Middletown

Miami University Middletown Gardner-Harvey Library (1970)

#### **New Concord**

Muskingum College Library (1966)

#### Oberlin

Oberlin College Library (1858)

#### Oxford

Miami University Libraries King Library (1909)

#### **Portsmouth**

Shawnee State University Library (1987)

# **Rio Grande**

University of Rio Grande Jeanette Albiez Davis Library (1966)

# Springfield

Clark County Public Library (1884)

#### Steubenville

Franciscan University of Steubenville John Paul II Library (1971) Public Library of Steubenville and Jefferson County (1950)

# Tiffin

Heidelberg College Beeghly Library (1964)

# Toledo

Toledo-Lucus County Public Library (1884) University of Toledo College of Law Library (1981) University of Toledo Library (1963)

# **University Heights**

John Carroll University Grasselli Library (1963)

#### Westerville

Otterbein College Courtright Memorial Library (1967)

# Wilmington

Wilmington College S. Arthur Watson Library (1986)

#### Wooster

College of Wooster Andrews Library (1966)

#### WorthIngton

Worthington Public Library (1984)

# Youngstown

Public Library of Youngstown and Mahoning County (1923) Youngstown State University William F. Maag Library (1971)

# **OKLAHOMA**

# Ada

East Central Oklahoma State University Linscheid Library (1914)

#### Alva

Northwestern Oklahoma State University J. W. Martin Library (1907)

# **Bethany**

Southern Nazarene University R. T. Williams Learning Resources Center (1971)

#### Durant

Southeastern Oklahoma State University Henry G. Bennett Memorial Library (1929)

#### Edmond

Central State University Library (1934)

#### Enid

Public Library of Enid and Garfield County (1908)

#### Langston

Langston University G. Lamar Harrison Library (1941)

# Lawton

Lawton Public Library (1987)

#### Norman

University of Oklahoma Libraries Bizzell Memorial Library (1893) University of Oklahoma Law Library (1978)

# Oklahoma City

Metropolitan Library System Main Library (1974) Oklahoma City University Dulaney Browne Library (1963) Oklahoma Department of Libraries (1893) REGIONAL

# Shawnee

Oklahoma Baptist University Library (1933)

#### Stillwater

Oklahoma State University Edmon Low Library (1907) REGIONAL

# Tahlequah

Northeastern Oklahoma State University John Vaughan Library (1923)

#### Tuisa

Tulsa City-County Library System (1963) University of Tulsa College of Law Library (1979) University of Tulsa McFarlin Library (1929)

#### Weatherford

Southwestern Oklahoma State University Al Harris Library (1958)

#### **OREGON**

#### **Ashland**

Southern Oregon State College Library (1953)

#### Bend

Central Oregon Community College Library/Media Service (1985)

#### Corvallis

Oregon State University Library (1907)

# Eugene

University of Oregon Law Library (1979) University of Oregon Library (1883)

#### **Forest Grove**

Pacific University Harvey W. Scott Memorial Library (1897)

# Klamath Falls

Oregon Institute of Technology Library (1982)

#### La Grande

Eastern Oregon State College Walter M. Pierce Library (1954)

# McMinnville

Linfield College Northup Library (1965)

#### Monmouth

Western Oregon State College Library (1967)

# **Pendleton**

Blue Mountain Community College Library (1983)

#### **Portland**

Lewis and Clark College Aubrey R. Watzek Library (1967)
Multnomah County Portland (1884)
Northwestern School of Law Lewis and Clark College Paul L. Boley
Law Library (1979)
Portland State University Millar Library (1963) REGIONAL
Reed College Library (1912)
U.S Department of Energy Bonneville Power Administration Library
(1962)

#### Salem

Oregon State Library (unknown)
Oregon Supreme Court Law Library (1974)
Willamette University College of Law Library (1979)
Willamette University Main Library (1969)

# **PANAMA**

# **Balboa Heights**

Panama Canal Commission Technical Resources Center

#### **PENNSYLVANIA**

### **Allentown**

Muhlenberg College Trexler Library (1939)

#### Altoona

Altoona Area Public Library (1969)

#### **Bethel Park**

Bethel Park Public Library (1980)

#### Bethlehem

Lehigh University Libraries Linderman Library (1876)

### Blue Bell

Montgomery County Community College Learning Resources Center (1975)

#### Bradford

University of Pittsburgh at Bradford T. Edwards & Tullah Hanley Library (1979)

#### **Broomall**

Marple Public Library (1988)

#### California

California University of Pennsylvania Louis L. Manderino Library (1986)

#### Carlisle

Dickinson College Boyd Lee Spahr Library (1947) Dickinson School of Law Sheeley-Lee Law Library (1978)

#### Cheyney

Cheyney University Leslie Pinckney Hill Library (1967)

# Collegeville

Ursinus College Myrin Library (1963)

#### Coraopolls

Robert Morris College Library (1978)

# Doylestown

Bucks County Free Library (1970)

# **East Stroudsburg**

East Stroudsburg University Kemp Library (1966)

#### Erle

Erie County Library System (1897)

#### Greenville

Thiel College Langenheim Memorial Library (1963)

# Harrisburg

State Library of Pennsylvania (unknown) REGIONAL Widener University Harrisburg Campus School of Law Library

### Haverford

Haverford College Magill Library (1897)

#### Hazleton

Hazleton Area Public Library (1964)

#### Indiana

Indiana University of Pennsylvania Stapleton Library (1962)

#### **Johnstown**

Cambria County Library System Glosser Memorial Library Building (1965)

#### Lancaster

Bucknell University Ellen Clarke Bertrand Library Franklin and Marshall College Shadek-Fackenthal Library (1895)

# Lewisburg

Bucknell University Ellen Clarke Bertrand Library (1963)

#### Mansfleld

Mansfield University Library (1968)

#### Meadville

Allegheny College Lawrence Lee Pelletier Library (1907)

# Millersville

Millersville University Helen A. Ganser Library (1966)

#### Monessen

Monessen Public Library (1969)

#### **New Castle**

New Castle Public Library (1963)

#### Newton

Bucks County Community College Library (1968)

# Norristown

Montgomery County-Norristown Public Library (1969)

# Philadelphia

Drexel University W. W. Hagerty Library (1963) Free Library of Philadelphia (1897) Saint Joseph's University Drexel Library (1974)
Temple University Paley Library (1947)
Temple University Law Library (1979)
U.S. Court of Appeals Third Circuit Library (1973)
University of Pennsylvania Biddle Law Library (1974)
University of Pennsylvania Library (1886)

# **Plttsburgh**

Allegheny County Law Library (1977)
Carnegie Library of Pittsburgh Allegheny Regional Branch (1924)
Carnegie Library of Pittsburgh (1895)
Duquesne University Law Library (1978)
La Roche College John J. Wright Library (1974)
U.S. Bureau of Mines Library (1962)
University of Pittsburgh Hillman Library (1910)
University of Pittsburgh Barco Law Library (1979)

# **Pottsville**

Pottsville Free Public Library (1967)

# Reading

Reading Public Library (1901)

#### Scranton

Scranton Public Library (1895)

# Shippensburg

Shippensburg University Ezra Lehman Memorial Library (1973)

# Slippery Rock

Bailey Library (1965)

# Swarthmore

Swarthmore College McCabe Library (1923)

# **University Park**

Pennsylvania State University Libraries Pattee Library (1907)

#### Villanova

Villanova University Law School Pulling Law Library (1964)

#### Warren

Warren Library Association Warren Public Library (1885)

#### Waynesburg

Waynesburg College Library (1964)

#### **West Chester**

West Chester University Francis Harvey Green Library (1967)

#### Wilkes-Barre

King's College D. Leonard Corgan Library (1949)

# Williamsport

Lycoming College Library (1970)

# York

York College of Pennsylvania Schmidt Library (1963)

# Youngwood

Westmoreland County Community College Learning Resources Center (1972)

#### **PUERTO RICO**

# Mayaguez

University of Puerto Rico Mayaguez Campus Library (1928)

#### Ponce

Catholic University of Puerto Rico Encarnacion Valdes Library (1966) Catholic University of Puerto Rico School of Law Library (1978)

#### Rio Piedras

University of Puerto Rico J. M. Lazaro Library (1928)

#### RHODE ISLAND

#### Barrington

Barrington Public Library (1986)

#### **Kingston**

University of Rhode Island Library (1907)

#### Newport

U.S. Naval War College Library (1963)

# Providence

Brown University John D. Rockefeller Jr. Library (unknown) Providence College Phillips Memorial Library (1969) Providence Public Library (1884) Rhode Island College James P. Adams Library (1965) Rhode Island State Law Library (1979) Rhode Island State Library (1895)

# Warwick

Warwick Public Library (1966)

#### Westerly

Westerly Public Library (1909)

#### Woonsocket

Woonsocket Harris Public Library (1977)

# **SOUTH CAROLINA**

#### Alken

University of South Carolina-Aiken Gregg-Graniteville Library (1989)

# Charleston

Baptist College at Charleston L. Mendel Rivers Library (1967) The Citadel Military College Daniel Library (1962) College of Charleston Robert Scott Small Library (1869)

# Clemson

Clemson University Cooper Library (1893)

#### Columbia

Benedict College Library Payton Learning Resources Center (1969) South Carolina State Library (1895) University of South Carolina Coleman Karesh Law Library (1983) University of South Carolina Thomas Cooper Library (1884)

# Conway

University of South Carolina Coastal Carolina College Kimbel Library (1974)

#### **Due West**

Erskine College McCain Library (1968)

#### Florence

Florence County Library (1967) Francis Marion College James A. Rogers Library (1970)

#### Greenville

Furman University Library (1962) Greenville County Library (1966)

#### Greenwood

Lander College Jackson Library (1967)

# Lancaster

University of South Carolina-Lancaster Medford Library

# Orangeburg

South Carolina State College Miller F. Whittaker Library (1953)

#### Rock HIII

Winthrop College Dacus Library (1896)

# Spartanburg

Spartanburg County Public Library (1967)

# SOUTH DAKOTA

#### Aberdeen

Northern State College Beulah Williams Library (1963)

# **Brookings**

South Dakota State University H. M. Briggs Library (1889)

#### Plerre

South Dakota State Library (1973) South Dakota Supreme Court Library (1978)

# Rapid City

Rapid City Public Library (1963)
South Dakota School of Mines and Technology Devereaux Library (1963)

### Sloux Falls

Augustana College Mikkelsen Library (1969) Sioux Falls Public Library (1903)

# Spearfish

Black Hills State University Library E. Y. Berry (1942)

#### Vermillion

University of South Dakota I. D. Weeks Library (1889)

# **TENNESSEE**

#### **Bristol**

King College E. W. King Library (1970)

# Chattanooga

Chattanooga-Hamilton County Bicentennial Library (1908) U.S. Tennessee Valley Authority Technical Library (1976)

#### Clarksville

Austin Peay State University Felix G. Woodward Library (1945)

# Cleveland

Cleveland State Community College Library (1973)

#### Columbia

Columbia State Community College John W. Finney Memorial Library (1973)

#### Cookeville

Tennessee Technological University Library (1969)

#### Jackson

Lambuth College Luther L. Gobbel Library (1967)

# **Jefferson City**

Carson-Newman College Stephens-Burnett Library (1964)

# Johnson City

East Tennessee State University Sherrod Library (1942)

#### KnoxvIIIe

Knoxville County Public Library System Lawson McGhee Library (1973) University of Tennessee at Knoxville John C. Hodges Library (1907)

University of Tennessee at KnoxvIIIe John C. Hodges Library University of Tennessee Law Library (1971)

#### Martin

University of Tennessee at Martin Paul Meek Library (1957)

# Memphis

Memphis-Shelby County Public Library and Information Center (1896) Memphis State University Cecil C. Humphreys School of Law Library (1979)

Memphis State University Libraries (1966)

#### Murfreesboro

Middle Tennessee State University Todd Library (1912)

#### Nashville

Fisk University Library (1965)
Public Library of Nashville and Davidson County (1884)
Tennessee State Library and Archives (unknown)
Tennessee State University Brown-Daniel Library (1972)
Vanderbilt University Alyne Queener Massey Law Library (1976)
Vanderbilt University Library (1884)

### Sewanee

University of the South Jessie Ball duPont Library (1873)

## **TEXAS**

# Abllene

Abilene Christian University Margaret and Herman Brown Library (1978) Hardin-Simmons University Rupert and Pauline Richardson Library (1940)

# Arlington

Arlington Public Library (1970) University of Texas at Arlington Library (1963)

#### Austin

Texas State Law Library (1972)
Texas State Library (unknown) REGIONAL
University of Texas at Austin Perry-Castaneda Library (1884)
University of Texas at Austin Edie and Lew Wasserman Public Affairs
Library (1966)

University of Texas at Austin Tarlton Law Library (1965)

# **Baytown**

Lee College Library (1970)

#### Beaumont

Lamar University Mary and John Gray Library (1957)

#### **Brownwood**

Howard Payne University Walker Memorial Library (1964)

#### Canyon

West Texas State University Cornette Library (1928)

# College Station

Texas Agricultural and Mechanical University Sterling G. Evans Library (1907)

#### Commerce

East Texas State University James Gilliam Gee Library (1937)

#### Corpus Christi

Corpus Christi State University Library (1976)

#### Corsicana

Navarro College Learning Resource Center (1965)

#### Dallas

Dallas Baptist University Vance Memorial Library (1967)
Dallas Public Library (1900)
Southern Methodist University Fondren Library (1925)
University of Texas Southwestern Medical Center Library (1975)

# Denton

North Texas State University Library (1948)

#### **Edinburg**

University of Texax-Pan American Library (1959)

#### El Paso

El Paso Public Library (1906) University of Texas at El Paso Library (1966)

#### Fort Worth

Fort Worth Public Library (1905) Texas Christian University Mary Couts Burnett Library (1916)

#### Galveston

Rosenberg Library (1909)

Houston Public Library (1884)

#### Garland

Nicholson Memorial Library System (1990)

#### Houston

North Harris County College (1974)
Rice University Fondren Library (1967)
South Texas College of Law Library (1981)
Texas Southern University Thurgood Marshall School of Law Library (1982)

University of Houston-Clear Lake Alfred R. Neumann Library (1980) University of Houston M. D. Anderson Library (1957) University of Houston School of Law Library (1979)

#### Huntsville

Sam Houston State University Newton Gresham Library (1949)

# irving

Irving Public Library System (1974)

# Kingsville

Texas Arts and Industries University Jernigan Library (1944)

# Laredo

Laredo Junior College Harold R. Yeary Library (1970)

# Longview

Longview Public Library (1961)

#### Lubbock

Texas Technical University Library (1935) REGIONAL Texas Technical University School of Law Library (1978)

#### Nacogdoches

Stephen F. Austin State University Steen Library (1965)

#### Richardson

University of Texas at Dallas McDermott Library (1972)

#### San Angelo

Angelo State University Port Henderson Library (1964)

# San Antonio

Palo Alto College Learning Resources Center Saint Mary's University Academic Library (1964) Saint Mary's University Sarita Kenedy East Law Library (1982) San Antonio College Library (1972) San Antonio Public Library (1899) Trinity University Elizabeth Coates Maddux Library (1964) University of Texas at San Antonio Library (1973)

#### San Marcos

Southwest Texas State University Library (1955)

# Seguin

Texas Lutheran College Blumberg Memorial Library (1970)

#### Sherman

Austin College Abell Library (1963)

#### Texarkana

Texarkana College Palmer Memorial Library (1963)

# Victoria

Victoria College/University of Houston Victoria Library (1973)

#### Waco

Baylor University Caston Law Library (1982) Baylor University Moody Memorial Library (1905)

#### Wichita Falls

Midwestern State University Moffett Library (1963)

#### UTAH

#### Cedar City

Southern Utah State College Library (1964)

#### **Ephralm**

Snow College Lucy A. Phillips Library (1963)

# Logan

Utah State University Merrill Library and Learning Resources Center (1907) REGIONAL

#### Ogden

Weber State College Stewart Library (1962)

#### Provo

Brigham Young University Harold B. Lee Library (1908) Brigham Young University Law Library (1972)

# Salt Lake City

University of Utah Eccles Health Sciences Library (1970)
University of Utah Law Library (1966)
University of Utah Marriott Library (1893)
Utah State Library (unknown)
Utah State Supreme Court Law Library (1975)

#### VERMONT

# Burlington

University of Vermont Bailey/Howe Library (1907)

#### Castleton

Castleton State College Calvin Coolidge Library (1969)

# Johnson

Johnson State College John Dewey Library (1955)

# Lyndonville

Lyndon State College Samuel Reed Hall Library (1969)

# Middlebury

Middlebury College Egbert Starr Library (1884)

# Montpeller

Vermont Department of Libraries (1845)

#### Northfield

Norwich University Chaplin Library (1908)

# South Royalton

Vermont Law School Library (1978)

#### **VIRGIN ISLANDS**

#### Saint Croix

Florence Williams Public Library (1968)

#### Saint Thomas

University of the Virgin Islands Ralph M. Paiewonsky Library (1973)

#### **VIRGINA**

#### Alexandria

Dept. of the Navy Office of Judge Advocate General Law Library (1963)

# Arlington

George Mason University School of Law Library (1981)
U.S. Patent & Trademark Office Scientific and Technical Information
Center (1986)

# Blacksburg

Virginia Polytechnic Institute and State University Carol M. Newman Library (1907)

# Bridgewater

Bridgewater College Alexander Mack Memorial Library (1902)

#### Charlottesville

University of Virginia Alderman Library (1910) REGIONAL University of Virginia Arthur J. Morris Law Library (1964)

# Chesapeake

Chesapeake Public Library (1970)

#### **Danville**

Danville Community College Learning Resources Center (1969)

# **Emory**

Emory and Henry College Kelly Library (1884)

#### **Fairfax**

George Mason University Fenwick Library (1960)

#### Fredericksburg

Mary Washington College Library (1940)

## Hampden-Sydney

Hampden-Sydney College Eggleston Library (1891)

#### Hampton

Hampton University Huntington Memorial Library (1977)

#### Harrisonburg

James Madison University Carrier Library (1973)

# Lexington

Virginia Military Institute Preston Library (1874) Washington and Lee University University Library (1910) Washington and Lee University Wilbur C. Hall Law Library (1978)

#### Martinsville

Patrick Henry Community College Learning Resource Center (1971)

### Norfolk

Norfolk Public Library (1895) Old Dominion University Library (1963) U.S. Armed Forces Staff College Library (1963)

# Petersburg

Virginia State University Johnston Memorial Library (1907)

#### Quantico

Federal Bureau of Investigation Academy Library (1970)
Marine Corps Education Center MCCDC James Carson Breckinridge
Library (1967)

#### Reston

Department of the Interior Geological Survey Library (1963)

#### Richmond

U.S. Court of Appeals Fourth Circuit Library (1973)
University of Richmond Boatwright Memorial Library (1900)
University of Richmond Law School Library (1982)
Virginia Commonwealth University Library Services (1971)
Virginia State Law Library (1973)
Virginia State Library & Archives (unknown)

# Roanoke

Hollins College Fisburn Library (1967)

#### Salem

Roanoke College Library (1886)

# Williamsburg

College of William and Mary Marshall-Wythe Law Library (1978) College of William and Mary Swern Library (1936)

#### Wise

Clinch Valley College John Cook Wyllie Library (1971)

# WASHINGTON

# Bellevue

Bellevue Public Library (1990)

# Bellingham

Western Washington University Mable Zoe Wilson Library (1963)

# Cheney

Eastern Washington University JFK Library (1966)

# **Des Moines**

Highline Community College Library (1983)

#### Ellensburg

Central Washington University Library (1962)

#### **Everett**

Everett Public Library (1914)

# Olympia

Evergreen State College Daniel J. Evans Library (1972) Washington State Law Library (1979) Washington State Library (unknown) REGIONAL

# **Port Angeles**

North Olympic Library System (1965)

#### Pullman

Washington State University Holland Library (unknown)

#### Seattle

Seattle Public Library (1908)
University of Washington Suzzallo Library (1890)
University of Washington Marian Gould Gallagher Law Library (1969)
U.S. Court of Appeals 9th Circuit Library (1981)

# Spokane

Gonzaga University School of Law Library (1979) Spokane Public Library (1910)

#### Tacoma

Tacoma Public Library (1894)
University of Puget Sound Collins Memorial Library (1938)
University of Puget Sound School of Law Library (1978)

#### Vancouver

Fort Vancouver Regional Library (1962)

#### Walla Walla

Whitman College Penrose Memorial Library (1890)

# **WEST VIRGINIA**

# Athens

Concord College J. Frank Marsh Library (1924)

#### Bluefleld

Bluefield State College Hardway Library (1972)

#### Charleston

Kanawha County Public Library (1952) West Virginia Library Commission (1975) West Virginia Supreme Court Law Library (1977)

# **Elkins**

Davis and Elkins College Library (1913)

#### **Fairmont**

Fairmont State College Library (1884)

# Huntington

Marshall University James E. Morrow Library (1925)

#### Institute

West Virginia State College Drain-Jordon Library (1907)

# Montgomery

West Virginia Institute of Technology Vining Library (1985)

# Morgantown

West Virginia University Library (1907) REGIONAL

#### Salem

Salem-Tolkyo University Benedum Library (1921)

# Shepherdstown

Shepherd College Scarborough Library (1971)

#### Welrton

Mary H. Weir Public Library (1963)

### WISCONSIN

#### Appleton

Lawrence University Seeley G. Mudd Library (1869)

# Beloit

Beloit College Col. Robert H. Morse Library (1888)

#### Eau Claire

University of Wisconsin-Eau Claire William D. McIntyre Library (1951)

#### Fond du Lac

Fond du Lac Public Library (1966)

# **Green Bay**

University of Wisconsin-Green Bay Library Learning Center (1968)

#### La Crosse

La Crosse Public Library (1883) University of Wisconsin-La Crosse Murphy Library (1965)

#### Madison

Madison Public Library (1965)
State Historical Society of Wisconsin Library (1870) REGIONAL
University of Wisconsin-Madison Memorial Library (1939)
University of Wisconsin-Madison Law Library (1981)
Wisconsin State Law Library (unknown)

#### Milwaukee

Alverno College Library/Media Center (1971)
Marquette University Law Library (1987)
Medical College of Wisconsin, Inc. Todd Wehr Library (1980)
Milwaukee County Law and Reference Library (1934)
Milwaukee Public Library (1861) REGIONAL
Mount Mary College Haggerty Library (1964)
University of Wisconsin-Milwaukee Golda Meir Library (1960)

#### Oshkosh

University of Wisconsin-Oshkosh Forrest R. Polk Library (1956)

# **Platteville**

University of Wisconsin-Platteville Karrmann Library (1964)

#### Racine

Racine Public Library (1898)

# Ripon

Ripon College Library (1982)

#### River Falls

University of Wisconsin-River Falls Chalmer Davee Library (1962)

# Sheboygan

Mead Public Library (1983)

#### Stevens Point

University of Wisconsin-Stevens Point Library (1951)

#### Superior

Superior Public Library (1908) University of Wisconsin-Superior Jim Dan Hill Library (1935)

#### Waukesha

Waukesha Public Library (1966)

#### Wausau

Marathon County Public Library (1971)

#### Whitewater

University of Wisconsin-Whitewater Library and Learning Resources (1963)

#### WYOMING

# Casper

Natrona County Public Library (1929)

# Cheyenne

Wyoming State Law Library (1977) Wyoming State Library (unknown) REGIONAL

#### Gillette

Campbell County Public Library (1980)

#### Laramie

University of Wyoming, Coe Library (1907) University of Wyoming Law Library (1978)

#### Powell

Northwest Community College John Taggart Hinckley Library (1967)

# Riverton

Central Wyoming College Learning Resources Center (1969)

# **Rock Springs**

Western Wyoming Community College Library (1969)

#### Sherldan

Sheridan College Griffith Memorial Library (1963)

# List of District Offices of the U.S. Department of Commerce

# **ALABAMA**

Birmingham-2015 2nd Avenue North, 3rd Floor, Berry Building, 35203, Area Code 205 Tel 731-1331, FTS 8 229-1331

#### **ALASKA**

**Anchorage–222** W. 7th Avenue, P.O. Box 32, 99513–7591, Area Code 907 Tel 271–5041, FTS 8 271–5041

#### **ARIZONA**

Phoenix-Federal Building & U.S. Courthouse, 230 N. 1st Avenue, Room 3412, 85025, Area Code 602 Tel 261-3285, FTS 8 261-3285

#### **ARKANSAS**

Little Rock-Suite 811, 320 W. Capitol Avenue, 72201, Area Code 501 Tel 378-5794, FTS 8 740-5794

#### **CALIFORNIA**

**Los Angeles-**Room 800, 11000 Willshire Blvd., 90049, Area Code 213 Tel 209-7104, FTS 8 793-7104

•San Diego-6363 Greenwich Drive, Suite 145, 92122, Area Code 619 Tel 557-5395, FTS 8 895-5395

San Francisco-Federal Building, Box 6013, 450 Golden Gate Avenue, 94102, Area Code 415 Tel 556-5860, FTS 8 556-5868

Santa Ana-116 W. 4th Street, Suite #1, 92701, Area Code 714 Tel 836-2461, FTS 8 799-2461

#### COLORADO

Denver-Room 119, U.S. Customhouse, 721 19th Street, 80202, Area Code 303 Tel 844-3246, FTS 8 564-3246

#### CONNECTICUT

Hartford-Room 610-B, Federal Office Building, 450 Main Street, 06103, Area Code 203 Tel 240-3530, FTS 8 244-3530

#### DISTRICT OF COLUMBIA

Room 1066, HCHB, Department of Commerce, 14th Street & Constitution Avenue, N.W., 20230, Area Code 202 Tel 377–3181, FTS 8 377–3181

#### **FLORIDA**

•Clearwater-128 North Osceola Avenue, 34615, Area Code 813 Tel 461-0011, FTS 8 826-3738

Mlaml–Suite 224, Federal Building, 51 S.W. First Avenue, 33130, Area Code 305 Tel 536–5267, FTS 8 350–5267

•Orlando-Room 346, University of Central Florida, 32802, Area Code 407 Tel 648-1608, FTS 8 820-6235

•Tallahassee-Collins Building, Room 401, 107 W. Gaines Street, 32304, Area Code 904 Tel 488-6469, FTS 8 965-7194

#### **GEORGIA**

Atlanta-Suite 310, 4380 Chamblee-Dunwoody Road, 30341, Area Code 404 Tel 452-9102

Savannah-120 Barnard Street, A-107, 31401, Area Code 912 Tel 944-4204, FTS 8 248-4204

#### HAWAII

Honolulu-4106 Federal Building, P.O. Box 50026, 300 Ala Moana Blvd., 96850, Area Code 808 Tel 541-1782, FTS 8 551-1785

#### IDAHO

Bolse (Denver, Colorado District)-700 W. State Street, 83720, Area Code 208 Tel 334-3867, FTS 8 554-9254

#### **ILLINOIS**

Chlcago-1406 Mid Continental Plaza Building, 55 E. Monroe Street, 60603, Area Code 312 Tel 353-4450, FTS 8 353-4450

- Palatine-W. R. Harper College, Algonquin & Rodelle Road, 60067, Area Code 312 Tel 397–3000, x2532
- •Rockford-515 N. Court Street, P.O. Box 1747, 61110-0247, Area Code 815 Tel 987-8123, FTS 8 363-4347

# **INDIANA**

Indianapolis-One N. Capitol, Suite 520, 46204, Area Code 317 Tel 269-6214, FTS 8 331-6139

#### **IOWA**

Cedar Raplds-424 First Avenue, N.E., 52407, Area Code 319 Tel 398-4317

Des Molnes-817 Federal Building, 210 Walnut Street, 50309, Area Code 515 Tel 284-4222, FTS 8 862-4222

#### KANSAS

Wichlta (Kansas City, Missouri District)

–151 North Volutsia, 67214–4695, Area Code 316 Tel 269–6160, FTS 8 752–6160

#### **KENTUCKY**

Louisville-Room 6368, 601 W. Broadway, 40202, Area Code 502 Tel 582-5066, FTS 8 352-5066

#### LOUISIANA

New Orleans-432 World Trade Center, No. 2 Canal Street, 70130, Area Code 504 Tel 589-6546. FTS 8 682-6546

<sup>•</sup>Denotes trade specialist at post or duty station

#### MAINE

 Augusta (Boston, Massachusetts District)-77 Sewell Street, 04330, Area Code 207 Tel 622-8249, FTS 8 833-6249

### MARYLAND

Baltimore—415 U.S. Customhouse, 40 South Gay Streets, 21202, Area Code 301 Tel 962–3560, FTS 8 922–3560

#### **MASSACHUSETTS**

Boston-World Trade Center, Suite 307, Commonwealth Pier Area, 02210, Area Code 617 Tel 565-8563, FTS 8 835-8563

#### **MICHIGAN**

Detroit-1140 McNamara Building, 477 Michigan Avenue, 48226, Area Code 313 Tel 226-3650, FTS 8 226-3650

•Grand Rapids-300 Monroe N.W., Room 409, 49503, Area Code 616 Tel 456-2411, FTS 8 372-2411

#### **MINNESOTA**

Minneapolis-108 Federal Building, 110 S. 4th St., 55401, Area Code 612 Tel 349-1638, FTS 8 777-1638

#### MISSISSIPPI

Jackson-328 Jackson Mall Office Center, 300 Woodrow Wilson Blvd., 39213, Area Code 601 Tel 965-4388, FTS 8 490-4388

#### **MISSOURI**

Kansas City-Room 635, 601 E. 12th Street, 64106, Area Code 816 Tel 426-3141, FTS 8 867-3141

St. Louis-7911 Forsyth Blvd., Suite 610, 63105, Area Code 314 Tel 425-3302-4, FTS 8 279-3302

# **NEBRASKA**

Omaha-1133 O Street, 68137, Area Code 402 Tel 221-3664, FTS 8 864-3664

#### **NEVADA**

Reno-1755 E. Plumb Lane, Room 152, 89502, Area Code 702 Tel 784-5203, FTS 8 470-5203

# **NEW JERSEY**

Trenton-3131 Princeton Pike Building, Suite 100, 08648, Area Code 609 Tel 989-2100, FTS 8 423-2100

#### **NEW MEXICO**

Albuquerque-5000 Marble Avenue, N.E., Suite 320, 87110, Area Code 505 Tel 262-6024, FTS 8 474-2386

# **NEW YORK**

Buffalo-1312 Federal Building, 111 W. Huron Street, 14202, Area Code 716 Tel 846-4191, FTS 8 437-4191

New York-Federal Office Building, 26 Federal Plaza, Foley Square, 10278, Area Code 212 Tel 264-0634, FTS 8 264-0634

•Rochester-111 E. Avenue, Suite 220, 14604, Area Code 716 Tel 263-6480, FTS 8 963-6480

#### **NORTH CAROLINA**

Greensboro-203 Federal Building, 324 W. Market Street, P.O. Box 1950, 27402, Area Code 919 Tel 333-5345, FTS 8 699-5345

#### OHIO

Cincinnati-9504 Federal Office Building, 550 Main Street, 45202, Area Code 513 Tel 684-2944, FTS 8 684-2944

Cleveland-Room 600, 668 Euclid Avenue, 44114, Area Code 216 Tel 522-4750, FTS 8 942-4750

#### **OKLAHOMA**

Oklahoma City-5 Broadway Executive Park, Suite 200, 6601 Broadway Extension, 73116, Area Code 405 Tel 231-5302, FTS 8 736-5302

•Tulsa-440 S. Houston Steet, 74127, Area Code 918 Tel 581-7650, FTS 8 745-7650

#### **OREGON**

Portland-Room 618, 1220 S.W. 3rd Avenue, 97204, Area Code 503 Tel 221-3001, FTS 8 423-3001

#### **PENNSYLVANIA**

Phlladelphla-9448 Federal Building, 600 Arch Street, 19106, Area Code 215 Tel 597-2850, FTS 8 597-2850

Pittsburgh-2002 Federal Building, 1000 Liberty Avenue, 15222, Area Code 412 Tel 644-2850, FTS 8 722-2850

#### **PUERTO RICO**

San Juan (Hato Rey)-Room G-55, Federal Building, Chardon Avenue, 00918, Area Code 809 Tel 786-5555, Ext. 555, FTS 8 498-5555

# **RHODE ISLAND**

Providence (Boston, Massachusetts District)

–7 Jackson Walkway, 02903, Area Code 401 Tel 528

–5104, FTS 8 838

–5104

#### **SOUTH CAROLINA**

•Charleston-Room 128, 9 Library Street, 29424, Area Code 803 Tel 724-4361, FTS 8 724-4361

Columbia-Strom Thurmond Federal Building, Suite 172, 1835 Assembly Street, 29201, Area Code 803 Tel 765-5345, FTS 8 677-5345

# **TENNESSEE**

•Memphls-22 N. Front Street, Suite 200, 38101, Area Code 901 Tel 521-4137, FTS 8 222-4137

Nashville-Suite 1114, Parkway Towers, 404 James Robertson Parkway, 37219-1505, Area Code 615 Tel 736-5161, FTS 8 852-5161

#### **TEXAS**

**Austin-**P.O. Box 12728, Suite 1200, 816 Congress Avenue, 78701, Area Code 512 Tel 482–5939, FTS 8 770–5939

Dallas-Room 7A5, 1100 Commerce Street, 75242, Area Code 214 Tel 767–0542, FTS 8 729–0542

Houston-2625 Federal Courthouse Building, 615 Rusk Street, 77002, Area Code 713 Tel 229-2578, FTS 8 526-4578

#### **UTAH**

Salt Lake City-324 S. State Street, Suite 105, 84111, Area Code 801 Tel 524-5116, FTS 8 588-5116

#### **VIRGINIA**

Richmond-8010 Federal Building, 400 North 8th Street, 23240, Area Code 804 Tel 771-2246, FTS 8 925-2246

#### WASHINGTON

Seattle-3131 Elliott Avenue, Suite 290, 98121, Area Code 206 Tel 442-5616, FTS 8 399-5615

**Spokane**-West 808 Spokane Falls Boulevard, Room 25, 99201, Area Code 509 Tel 439-4557, FTS 8 439-4557

#### **WEST VIRGINIA**

Charleston-405 Capitol Street, 26301, Area Code 304 Tel 347-5408, FTS 8 930-5408

#### WISCONSIN

Milwaukee-605 Federal Building, 517 E. Wisconsin Avenue, 53202, Area Code 414 Tel 291-3470, FTS 8 362-3470



# ANNOUNCEMENT OF NEW PUBLICATIONS OF THE NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY

Superintendent of Documents Government Printing Office Washington, DC 20402

Dear Sir:

Please add my name to the announcement list of new publications as issued by the National Institute of Standards and Technology.

Name			
Company			
Address			
City	State	Zip Code	

(Notification key N519)



# Superintendent of Documents Publications and Subscriptions Order Form

\*6870

Charge your order.

It's Easy!





# **Publications**

Please Type or Print (Form is aligned for typewriter use.)

Total for Publ  Qty. (List ID)  Title	Each Pr							
Subscriptions								
Subscriptions								
Subscriptions								
Subscriptions								
Subscriptions								
	lications							
Qty. (List ID) Title	Price	Total						
	Each	Price						
NOTE: Prices include regular domestic postage and handling and are subject to change.  Total for Subsci	criptions							
International customers please add 25%.  Total Cost of	of Order							
(Company or Personal Name) (Please type or print) Please Choose Method of Payment:	•							
Check Payable to the Superinten	ndent of Do	ocuments						
(Additional address/attention line) GPO Deposit Account	GPO Deposit Account  VISA or MasterCard Account							
(Street address) VISA or MasterCard Account								
(Street audiess)								
(City, State, ZIP Code) (Credit card expiration date)	(Credit card expiration date)  Thank you your ord							
(Daytime phone including area code)	•							
(Authorizing Signature)								
	Mail To: New Orders, Superintendent of Documents							
May we make your name/address available to other mailers?  P.O. Box 371954, Pittsburgh	h PA 15250	J <del>-</del> 7954						



U.S. DEPARTMENT OF COMMERCE National Technical Information Service SPRINGFIELD, VA 22161

# ORDER FORM



# **TELEPHONE ORDERS**

Call (703) 487-4650

1 Address Information

**TELEX 89-9405** Telecopier (703) 321-8547 Subscriptions: (703) 487-4630 (See reverse side for RUSH and EXPRESS ordering options)

- HANDLING FEE: A handling fee is required for each order except for Express, Rush, Subscription, QuikORDER, or Pickup orders.
- · SHIPPING: U.S.: Printed reports and microfiche copies are shipped First Class Mail or equivalent.

FOREIGN: Regular service: Printed reports and microfiche copies are shipped surface mail.

Air Mail service to Canada and Mexico: add \$3 per printed report; 75¢ per microfiche copy. Air Mail service to all other addresses: add \$6 per printed report; 75¢ per microfiche copy. SUBSCRIPTIONS and standing orders are sent surface mail; contact NTIS for air mail rates.

1 Address Informati	DTIC Users Cod	DTIC Users Code: Contract No.								
PURCHASER: DATE:										
Last Name	First Initial	Last Name First Initia					ial			
Tide		Tide								
Company/Organization Comp			npany/Organization							
Address	Address									
City/State/ZIP		City/State/ZIP								
Attention		Attention								
Telephone number Telephone nu			nber							
2 Method of Paymer	nt									
☐ Charge my NTIS Deposit Accou		☐ Check/Mone	y order e	nclosed	for \$					
Charge my Amer. Express										
Account No.		I lease oill 1	700 41	o per o	1001 (50	e oelow lor	1850100015) [			
01		Purchas	e Order No							
Signature: (Required to ve	alidate all orders)									
3 Order Selection	(For computer products, see a	reverse)	QUA	NTITY	]					
Enter NTIS order number(s) (Ordering by title only will delay your of	order)	Customer†† Routing (up to 8 digits)	Printed Copy	Micro- fiche	UNIT PRICE	Foreign Air Mail	TOTAL PRICE			
1.										
2.										
3.										
4.										
5.										
6.										
7.										
OVER - Order continued	1 on reverse		SUBTOTAL From Other Side							
† Billing Service: This service is restricted to customers in the United States, Canada, and Mexico for an additional \$7.50 per order. A late payment charge will be applied to all billings more than 30 days overdue.			Regular Service Handling Fee per order (\$3 U.S., Canada, and Mexico; \$4 others)							
			Billing Fee if required (\$7.50)							
†† Customer Routing Code: NTIS can label each item for routing within your organization. If you want this service, put your routing code in this box.			GRAND TOTAL							
organization. If you want this sorvice,	put your rousing wood in this box.	_								

# NTS. ORDER FORM - Side 2

3 Order Selection (Cont.)			QUANTITY				
Enter the NTIS order number(s) (Ordering by title only will delay your order)		ner I	Printed Copy	Micro- fiche	UNIT PRICE	Foreign Air Mail	TOTAL
8.							
9,							
0.							·
1.							
2.							
3							
4.		_					<del></del>
15.							
16.							
17.							
18.		-		-			
19.							
					Subtotal		
4 Computer Products	If you have questions about a particular puter product, please call our Federal (Products Center at (703) 487-4763.	o í	ther s		TAPE C	ENSITY rack)	, <u>;</u>
Enter the NTIS order number(s) (Ordering by title only will delay your order)				stomer	1600 bpi	6250 bpi	TOTAL PRICE
20.							
21.							
22.							
23.							
All magnetic tapes are sent air mail or equivalent					Subtotal		

SPECIAL RUSH and EXPRESS ORDERING OPTIONS

service to both U.S. and foreign addresses.

RUSH SERVICE-Add \$10 per item: Orders are processed within 24 hours and sent First Class or equivalent. Available to U.S. addresses.

ENTER this amount on the other side of this form.

Telephone: (800

(800) 336-4700

in Virginia call (703) 487-4700

EXPRESS SERVICE-Add \$20 per item: Orders are processed within 24 hours AND delivered by overnight courier. Available to U.S. addresses only.





# NIST Technical Publications

# Periodical

Formal of Money and the Northwest contents of Standards and Tachestes. - Proposition of the Standards and Englishment of the Standards of the Standards and Englishment of the Landards of the Standards of the St

the area reclined as a section of the control of th

# Vonperunting

Management of the community of the control of the c

Therefore the common few specimens are not present point of the demand state of the demander o

Special Production of the control of the first production by National States and the second control of the cont

Applied Matter also were an income that tables around, in A to development to reach the section of the section

Malphoral Supplies of the complete of the complete of the complete of the planet of the planet of the complete of the complete

Balling to the Second control of the American Control of the Contr

Technical Nate: Under a country and a real or a modern or beautiful and a companion of a single or definition in the technical or the superior of a country of the technical or the superior of a country of the technical or the superior of a country of the superior of a country of the superior of a country of the superior of the super

Volume and the product of the produc

Comment of the control of the contro

Once on tobordon Advis policy of the control of the control of the Advisor Annual Control of Theorem Control of the Control of

Francis Information Process in Supplied Pointenance (PIDe Purit — habite took or the sent continuous to Francis Information Processing Standard Register. The Results of the other of name of information in the Francis Information register, standards Society to MIST purposed to be extend Properly and Administrative Service. As at 1944 as amended, Public Law 85 for 1944 and 1921 and a complete model by Secoular Order 1971 (16 FR 12) 5, these May 11, 1957) and Puri Service 11, 17 (16 FR 12) 5.

HIST Interageur, Appare militaril. A presidence of interior or find report on work performed by MIST in national sources (topo potentiales and non-president). In general, mind distribution is harded to the record period distribution is by the National Technical Intermediate Section Section 1.

ADMINISTRATION & WALAGE IENT

VERONAUTICS & APRODYJAMIOS

- FRI ULI FE & FOOT

ASTROP SICE

ATMO - ERIC SCIENCES

\* EH VIOR & SOCIETY

BIOMEDICAL TECHNOLOGY & LINE EACTOR FOR GUEERING

BUILDING INDUSTRY TECHNOLOGY

BUSINESS | ECONOMICS

CHEMISTRY

LIVIL ENGINEERING

COMBUSTIO L ENGINES & PROPELLANTS

COMMUNICATION

COMPUTERS, CONTRO & IF MAT THEORY

DETECTION & COUNT PMEASURES

E CTROTECHNOLOGY

ENERGY

ENVIRONMENTAL POLLUTION & TRUL

HEALTH CARE

INDUSTRIAL & MECHANICAL E I TINEEPING

LIBRARY & INFORMATION SO ENGES

MANUFACTURING TECHNOLOGY

MATERIALS SCIENCES

MA HEMATICAL SCIENCES

MEDICINE P BIOLOGY

MILITARY SCIENCES

MISSILE TECHNOLOG

ATURA RESOURCES & EASTE SCIENCE

NAVIGATION, GUIDANCE & CONTROL

NUCLEAR SCIENCE & TECHNOLOGY

OCEAN TECHNOLOGY & E GINE RING

ORDNANCE

PHOTOGRAPHY & RECORDING LEVICES

PH SICS

PROBLEM-SOLVING NOR AT ON FOR AT & LO AL GO BUMEN S

SPACE TECHNOLOGY

TRANSPORTATION

URBAN & PEGIONAL TECHNOLOGY & D. VELOPMENT

