Dated; September 20, 1999.

Peter W. Karp,

Forest Supervisor.

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DEPARTMENT OF COMMERCE

National Institute of Standards and Technology

Government-Owned Inventions Available for Licensing

AGENCY: National Institute of Standards and Technology, Commerce.

ACTION: Notice of Government-owned inventions available for licensing.

SUMMARY: The inventions listed below are owned in whole or in part by the U.S. Government, as represented by the Department of Commerce. The Department of Commerce's ownership interest in the inventions is available for licensing in accordance with 35 U.S.C. 207 and 37 CFR Part 404 to achieve expeditious commercialization of results of Federally funded research and development.

FOR FURTHER INFORMATION CONTACT: Technical and licensing information on these inventions may be obtained by writing to: National Institute of Standards and Technology, Office of Technology Partnerships, Building 820, Room 213, Gaithersburg, MD 20899; Fax 301–869–2751. Any request for information should include the NIST Docket No. and Title for the relevant invention as indicated below.

SUPPLEMENTARY INFORMATION: NIST may enter into a Cooperative Research and Development Agreement (''CRADA'') with the licensee to perform further research on the inventions for purposes of commercializations. The inventions available for licensing are:

NIST Docket Number: 95–036US.

Title: X-Ray Lithography Mask Inspection System.

Abstract: The invention is jointly owned by the U.S. Government, as represented by the Secretary of Commerce, and Wisconsin Alumni Research Foundation. The Department of Commerce's ownership interest in this invention is available for nonexclusive licensing. The invention uses an x-ray conversion microscope to form an enlarged image of the actual x-ray pattern that an x-ray mask would project onto a resist. Present x-ray mask inspection is done by electron microscopes where the image produced is representative of the interaction of high energy electrons with the features on the mask. The proposed technique would instead form images from the x-ray transmission of the mask, the quantity most relevant to the mask's performance in the x-ray lithography process.

NIST Docket Number: 96–045US.

Title: Electroenzymatic Reactor and Method for Enzymatic Catalysis.

Abstract: The invention is jointly owned by the U.S. Government, as represented by the Secretary of Commerce, and the University of California, Los Angeles. Interest in biocatlytic hydroxylation derives from its ability to transform organic substrates having no functional groups into oxygen-bearing compounds with high regio- or stereo-selectivity. Use of redox enzymes in these syntheses is hampered by intrinsic dependence on stoichiometric amounts of freely dissociated cofactors, such as NADH and/or redox partner proteins, which supply necessary reducing equivalents. Economic feasibility requires that simple, regeneration can meet these requirements. Previously, a bioelectrochemical process has been described in which electrons are transferred directly (without mediators) between an electrode and redox-active biological material, such as an enzyme or protein. In that work, electron transfer was achieved using various modified metal or graphite electrodes. Such processes suffer from either inefficiency (low redox reaction rates) or rapid decline in activity due to component fouling by proteins. In the present disclosure, the P450 enzymatic cycle, which requires a continuous supply of reducing equivalents, molecular oxygen and an amendable organic substrate, is utilized in an unique electroenzymatic reactor to catalyze the generation of stereochemical hydroxylation products. The reactor permits rapid and persistent electron transfer to a P450 protein cofactor (putidaredoxin) by using certain tin oxide or iridium oxide cathodes, while simultaneously providing necessary dissolved oxygen at platinum or ruthenium oxide counter electrodes. The need for NADH and the redox protein, flavin reductase, which are required in the native cycle, has been eliminated.

NIST Docket Number: 96–048US.

Title: Surface Immobilization of Biopolymers.

Abstract: In one embodiment, the present invention provides a biopolymer-containing monolayer comprising: thiol-derivatized biopolymers and organic thiols bound to a metal substrate. In another embodiment, the present invention provides a method for forming this biopoly-containing monolayer. Preferably, the biopolymers are single-stranded DNA probes.

NIST Docket Number: 98–024US.

Title: System for Stabilizing and Controlling a Hoisted Load.

Abstract: A load control method that can be adapted to single point lift mechanisms such as boom cranes can precisely control the position, velocity and force of a spreader bar or other tools in six degrees of freedom. Winches can be controlled manually by a multi-axis joystick, or can be automatically controlled by computer. Various combinations of manual and automatic control can also be implemented. The invention has application in preventing load pendulation during the off-loading of cargo from ships in high seas and in improving safety in the handling of loads in terrestrial applications.

NIST Docket Number: 99–008US.

Title: Test-Chip Carrier.

Abstract: The invention is jointly owned by the U.S. Government, as represented by the Secretary of Commerce, and Sandia National Laboratories. The Department of Commerce's ownership interest in this invention is available for nonexclusive licensing. A test-chip carrier includes a standard semiconductor wafer of single crystal material with a crystallographic lattice on at least one major surface. A mask is formed on the one major surface, including a coating of masking material, and patterning the masking material to define a rectangularly shaped test-chip receiving pit and one or more reference marks to facilitate location of target reference features. The test-chip receiving pit is positioned with one diagonal extending parallel to a first crystallographic lattice vector/direction and another diagonal extending parallel to a second crystallographic lattice vector/direction, *e.g.* the (010) and (001) crystallographic vectors. The semiconductor wafer is lattice-plans selective etched to form the test-chip receiving pit and the one or more reference marks. A plurality of pits can be formed if desired and a test-chip is mounted in each of the pits to provide multiple calibration artifacts, failure analysis, or product chip mounting.

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Karen Brown,

Deputy Director.

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