

110<sup>TH</sup> CONGRESS  
2<sup>D</sup> SESSION

# H. R. 5940

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## AN ACT

To authorize activities for support of nanotechnology research and development, and for other purposes.

1 *Be it enacted by the Senate and House of Representa-*  
2 *tives of the United States of America in Congress assembled,*

1 **SECTION 1. SHORT TITLE.**

2 This Act may be cited as the “National  
3 Nanotechnology Initiative Amendments Act of 2008”.

4 **SEC. 2. NATIONAL NANOTECHNOLOGY PROGRAM AMEND-**  
5 **MENTS.**

6 The 21st Century Nanotechnology Research and De-  
7 velopment Act (15 U.S.C. 7501 et seq.) is amended—

8 (1) by striking section 2(c)(4) and inserting the  
9 following new paragraph:

10 “(4) develop, within 12 months after the date  
11 of enactment of the National Nanotechnology Initia-  
12 tive Amendments Act of 2008, and update every 3  
13 years thereafter, a strategic plan to guide the activi-  
14 ties described under subsection (b) that specifies  
15 near-term and long-term objectives for the Program,  
16 the anticipated time frame for achieving the near-  
17 term objectives, and the metrics to be used for as-  
18 sessing progress toward the objectives, and that de-  
19 scribes—

20 “(A) how the Program will move results  
21 out of the laboratory and into applications for  
22 the benefit of society, including through co-  
23 operation and collaborations with  
24 nanotechnology research, development, and  
25 technology transition initiatives supported by  
26 the States;

1           “(B) how the Program will encourage and  
2           support interdisciplinary research and develop-  
3           ment in nanotechnology; and

4           “(C) proposed research in areas of national  
5           importance in accordance with the requirements  
6           of section 5 of the National Nanotechnology  
7           Initiative Amendments Act of 2008;”;

8           (2) in section 2—

9           (A) in subsection (d)—

10           (i) by redesignating paragraphs (1)  
11           through (5) as paragraphs (2) through (6),  
12           respectively; and

13           (ii) by inserting the following new  
14           paragraph before paragraph (2), as so re-  
15           designated by clause (i) of this subpara-  
16           graph:

17           “(1) the Program budget, for the previous fiscal  
18           year, for each agency that participates in the Pro-  
19           gram, including a breakout of spending for the de-  
20           velopment and acquisition of research facilities and  
21           instrumentation, for each program component area,  
22           and for all activities pursuant to subsection  
23           (b)(10);”;

24           (B) by inserting at the end the following  
25           new subsection:

1       “(e) STANDARDS SETTING.—The agencies partici-  
2       pating in the Program shall support the activities of com-  
3       mittees involved in the development of standards for  
4       nanotechnology and may reimburse the travel costs of sci-  
5       entists and engineers who participate in activities of such  
6       committees.”;

7               (3) by striking section 3(b) and inserting the  
8       following new subsection:

9       “(b) FUNDING.—(1) The operation of the National  
10       Nanotechnology Coordination Office shall be supported by  
11       funds from each agency participating in the Program. The  
12       portion of such Office’s total budget provided by each  
13       agency for each fiscal year shall be in the same proportion  
14       as the agency’s share of the total budget for the Program  
15       for the previous fiscal year, as specified in the report re-  
16       quired under section 2(d)(1).

17       “(2) The annual report under section 2(d) shall in-  
18       clude—

19               “(A) a description of the funding required by  
20       the National Nanotechnology Coordination Office to  
21       perform the functions specified under subsection (a)  
22       for the next fiscal year by category of activity, in-  
23       cluding the funding required to carry out the re-  
24       quirements of section 2(b)(10)(D), subsection (d) of  
25       this section, and section 5;

1           “(B) a description of the funding required by  
2           such Office to perform the functions specified under  
3           subsection (a) for the current fiscal year by category  
4           of activity, including the funding required to carry  
5           out the requirements of subsection (d); and

6           “(C) the amount of funding provided for such  
7           Office for the current fiscal year by each agency par-  
8           ticipating in the Program.”;

9           (4) by inserting at the end of section 3 the fol-  
10          lowing new subsection:

11          “(d) PUBLIC INFORMATION.—(1) The National  
12          Nanotechnology Coordination Office shall develop and  
13          maintain a database accessible by the public of projects  
14          funded under the Environmental, Health, and Safety, the  
15          Education and Societal Dimensions, and the  
16          Nanomanufacturing program component areas, or any  
17          successor program component areas, including a descrip-  
18          tion of each project, its source of funding by agency, and  
19          its funding history. For the Environmental, Health, and  
20          Safety program component area, or any successor pro-  
21          gram component area, projects shall be grouped by major  
22          objective as defined by the research plan required under  
23          section 3(b) of the National Nanotechnology Initiative  
24          Amendments Act of 2008. For the Education and Societal  
25          Dimensions program component area, or any successor

1 program component area, the projects shall be grouped in  
2 subcategories of—

3 “(A) education in formal settings;

4 “(B) education in informal settings;

5 “(C) public outreach; and

6 “(D) ethical, legal, and other societal issues.

7 “(2) The National Nanotechnology Coordination Of-  
8 fice shall develop, maintain, and publicize information on  
9 nanotechnology facilities supported under the Program,  
10 and may include information on nanotechnology facilities  
11 supported by the States, that are accessible for use by in-  
12 dividuals from academic institutions and from industry.  
13 The information shall include at a minimum the terms and  
14 conditions for the use of each facility, a description of the  
15 capabilities of the instruments and equipment available for  
16 use at the facility, and a description of the technical sup-  
17 port available to assist users of the facility.”;

18 (5) in section 4(a)—

19 (A) by striking “or designate”;

20 (B) by inserting “as a distinct entity”  
21 after “Advisory Panel”; and

22 (C) by inserting at the end “The Advisory  
23 Panel shall form a subpanel with membership  
24 having specific qualifications tailored to enable

1 it to carry out the requirements of subsection  
2 (e)(7).”;

3 (6) in section 4(b)—

4 (A) by striking “or designated” and “or  
5 designating”; and

6 (B) by adding at the end the following:

7 “At least one member of the Advisory Panel  
8 shall be an individual employed by and rep-  
9 resenting a minority-serving institution.”;

10 (7) by amending section 5 to read as follows:

11 **“SEC. 5. TRIENNIAL EXTERNAL REVIEW OF THE NATIONAL**

12 **NANOTECHNOLOGY PROGRAM.**

13 “(a) IN GENERAL.—The Director of the National  
14 Nanotechnology Coordination Office shall enter into an ar-  
15 rangement with the National Research Council of the Na-  
16 tional Academy of Sciences to conduct a triennial review  
17 of the Program. The Director shall ensure that the ar-  
18 rangement with the National Research Council is con-  
19 cluded in order to allow sufficient time for the reporting  
20 requirements of subsection (b) to be satisfied. Each tri-  
21 ennial review shall include an evaluation of the—

22 “(1) research priorities and technical content of  
23 the Program, including whether the allocation of  
24 funding among program component areas, as des-  
25 ignated according to section 2(c)(2), is appropriate;

1           “(2) effectiveness of the Program’s manage-  
2           ment and coordination across agencies and dis-  
3           ciplines, including an assessment of the effectiveness  
4           of the National Nanotechnology Coordination Office;

5           “(3) Program’s scientific and technological ac-  
6           complishments and its success in transferring tech-  
7           nology to the private sector; and

8           “(4) adequacy of the Program’s activities ad-  
9           dressing ethical, legal, environmental, and other ap-  
10          propriate societal concerns, including human health  
11          concerns.

12          “(b) EVALUATION TO BE TRANSMITTED TO CON-  
13          GRESS.—The National Research Council shall document  
14          the results of each triennial review carried out in accord-  
15          ance with subsection (a) in a report that includes any rec-  
16          ommendations for ways to improve the Program’s man-  
17          agement and coordination processes and for changes to  
18          the Program’s objectives, funding priorities, and technical  
19          content. Each report shall be submitted to the Director  
20          of the National Nanotechnology Coordination Office, who  
21          shall transmit it to the Advisory Panel, the Committee on  
22          Commerce, Science, and Transportation of the Senate,  
23          and the Committee on Science and Technology of the  
24          House of Representatives not later than September 30 of

1 every third year, with the first report due September 30,  
2 2009.

3 “(c) FUNDING.—Of the amounts provided in accord-  
4 ance with section 3(b)(1), the following amounts shall be  
5 available to carry out this section:

6 “(1) \$500,000 for fiscal year 2009.

7 “(2) \$500,000 for fiscal year 2010.

8 “(3) \$500,000 for fiscal year 2011.”; and

9 (8) in section 10—

10 (A) by amending paragraph (2) to read as  
11 follows:

12 “(2) NANOTECHNOLOGY.—The term  
13 ‘nanotechnology’ means the science and technology  
14 that will enable one to understand, measure, manip-  
15 ulate, and manufacture at the nanoscale, aimed at  
16 creating materials, devices, and systems with fun-  
17 damentally new properties or functions.”; and

18 (B) by adding at the end the following new  
19 paragraph:

20 “(7) NANOSCALE.—The term ‘nanoscale’ means  
21 one or more dimensions of between approximately 1  
22 and 100 nanometers.”.

23 **SEC. 3. SOCIETAL DIMENSIONS OF NANOTECHNOLOGY.**

24 (a) COORDINATOR FOR SOCIETAL DIMENSIONS OF  
25 NANOTECHNOLOGY.—The Director of the Office of

1 Science and Technology Policy shall designate an associate  
2 director of the Office of Science and Technology Policy  
3 as the Coordinator for Societal Dimensions of  
4 Nanotechnology. The Coordinator shall be responsible for  
5 oversight of the coordination, planning, and budget  
6 prioritization of activities required by section 2(b)(10) of  
7 the 21st Century Nanotechnology Research and Develop-  
8 ment Act (15 U.S.C. 7501(b)(10)). The Coordinator shall,  
9 with the assistance of appropriate senior officials of the  
10 agencies funding activities within the Environmental,  
11 Health, and Safety and the Education and Societal Di-  
12 mensions program component areas of the Program, or  
13 any successor program component areas, ensure that the  
14 requirements of such section 2(b)(10) are satisfied. The  
15 responsibilities of the Coordinator shall include—

16           (1) ensuring that a research plan for the envi-  
17           ronmental, health, and safety research activities re-  
18           quired under subsection (b) is developed, updated,  
19           and implemented and that the plan is responsive to  
20           the recommendations of the subpanel of the Advi-  
21           sory Panel established under section 4(a) of the 21st  
22           Century Nanotechnology Research and Development  
23           Act (15 U.S.C. 7503(a)), as amended by this Act;

24           (2) encouraging and monitoring the efforts of  
25           the agencies participating in the Program to allocate

1 the level of resources and management attention  
2 necessary to ensure that the ethical, legal, environ-  
3 mental, and other appropriate societal concerns re-  
4 lated to nanotechnology, including human health  
5 concerns, are addressed under the Program, includ-  
6 ing the implementation of the research plan de-  
7 scribed in subsection (b); and

8 (3) encouraging the agencies required to de-  
9 velop the research plan under subsection (b) to iden-  
10 tify, assess, and implement suitable mechanisms for  
11 the establishment of public-private partnerships for  
12 support of environmental, health, and safety re-  
13 search.

14 (b) RESEARCH PLAN.—

15 (1) IN GENERAL.—The Coordinator for Societal  
16 Dimensions of Nanotechnology shall convene and  
17 chair a panel comprised of representatives from the  
18 agencies funding research activities under the Envi-  
19 ronmental, Health, and Safety program component  
20 area of the Program, or any successor program com-  
21 ponent area, and from such other agencies as the  
22 Coordinator considers necessary to develop, periodi-  
23 cally update, and coordinate the implementation of  
24 a research plan for this program component area. In  
25 developing and updating the plan, the panel con-

1       vened by the Coordinator shall solicit and be respon-  
2       sive to recommendations and advice from—

3               (A) the subpanel of the Advisory Panel es-  
4               tablished under section 4(a) of the 21st Cen-  
5               tury Nanotechnology Research and Develop-  
6               ment Act (15 U.S.C. 7503(a)), as amended by  
7               this Act; and

8               (B) the agencies responsible for environ-  
9               mental, health, and safety regulations associ-  
10              ated with the production, use, and disposal of  
11              nanoscale materials and products.

12              (2) DEVELOPMENT OF STANDARDS.—The plan  
13              required under paragraph (1) shall include a de-  
14              scription of how the Program will help to ensure the  
15              development of—

16              (A) standards related to nomenclature as-  
17              sociated with engineered nanoscale materials;

18              (B) engineered nanoscale standard ref-  
19              erence materials for environmental, health, and  
20              safety testing; and

21              (C) standards related to methods and pro-  
22              cedures for detecting, measuring, monitoring,  
23              sampling, and testing engineered nanoscale ma-  
24              terials for environmental, health, and safety im-  
25              pacts.

1           (3) COMPONENTS OF PLAN.—The plan required  
2 under paragraph (1) shall, with respect to activities  
3 described in paragraphs (1) and (2)—

4           (A) specify near-term research objectives  
5 and long-term research objectives;

6           (B) specify milestones associated with each  
7 near-term objective and the estimated time and  
8 resources required to reach each milestone;

9           (C) with respect to subparagraphs (A) and  
10 (B), describe the role of each agency carrying  
11 out or sponsoring research in order to meet the  
12 objectives specified under subparagraph (A) and  
13 to achieve the milestones specified under sub-  
14 paragraph (B);

15           (D) specify the funding allocated to each  
16 major objective of the plan and the source of  
17 funding by agency for the current fiscal year;  
18 and

19           (E) estimate the funding required for each  
20 major objective of the plan and the source of  
21 funding by agency for the following 3 fiscal  
22 years.

23           (4) TRANSMITTAL TO CONGRESS.—The plan re-  
24 quired under paragraph (1) shall be submitted not  
25 later than 60 days after the date of enactment of

1 this Act to the Committee on Commerce, Science,  
2 and Transportation of the Senate and the Com-  
3 mittee on Science and Technology of the House of  
4 Representatives.

5 (5) UPDATING AND APPENDING TO REPORT.—

6 The plan required under paragraph (1) shall be up-  
7 dated annually and appended to the report required  
8 under section 2(d) of the 21st Century  
9 Nanotechnology Research and Development Act (15  
10 U.S.C. 7501(d)).

11 (c) NANOTECHNOLOGY PARTNERSHIPS.—

12 (1) ESTABLISHMENT.—As part of the program  
13 authorized by section 9 of the National Science  
14 Foundation Authorization Act of 2002, the Director  
15 of the National Science Foundation shall provide 1  
16 or more grants to establish partnerships as defined  
17 by subsection (a)(2) of that section, except that each  
18 such partnership shall include 1 or more businesses  
19 engaged in the production of nanoscale materials,  
20 products, or devices. Partnerships established in ac-  
21 cordance with this subsection shall be designated as  
22 “Nanotechnology Education Partnerships”.

23 (2) PURPOSE.—Nanotechnology Education

24 Partnerships shall be designed to recruit and help  
25 prepare secondary school students to pursue postsec-

1       ondary level courses of instruction in  
2       nanotechnology. At a minimum, grants shall be used  
3       to support—

4               (A) professional development activities to  
5               enable secondary school teachers to use cur-  
6               ricular materials incorporating nanotechnology  
7               and to inform teachers about career possibilities  
8               for students in nanotechnology;

9               (B) enrichment programs for students, in-  
10              cluding access to nanotechnology facilities and  
11              equipment at partner institutions, to increase  
12              their understanding of nanoscale science and  
13              technology and to inform them about career  
14              possibilities in nanotechnology as scientists, en-  
15              gineers, and technicians; and

16              (C) identification of appropriate  
17              nanotechnology educational materials and incor-  
18              poration of nanotechnology into the curriculum  
19              for secondary school students at one or more  
20              organizations participating in a Partnership.

21              (3) SELECTION.—Grants under this subsection  
22              shall be awarded in accordance with subsection (b)  
23              of such section 9, except that paragraph (3)(B) of  
24              that subsection shall not apply.

25              (d) UNDERGRADUATE EDUCATION PROGRAMS.—

1           (1) ACTIVITIES SUPPORTED.—As part of the  
2 activities included under the Education and Societal  
3 Dimensions program component area, or any suc-  
4 cessor program component area, the Program shall  
5 support efforts to introduce nanoscale science, engi-  
6 neering, and technology into undergraduate science  
7 and engineering education through a variety of  
8 interdisciplinary approaches. Activities supported  
9 may include—

10                   (A) development of courses of instruction  
11 or modules to existing courses;

12                   (B) faculty professional development; and

13                   (C) acquisition of equipment and instru-  
14 mentation suitable for undergraduate education  
15 and research in nanotechnology.

16           (2) COURSE, CURRICULUM, AND LABORATORY  
17 IMPROVEMENT AUTHORIZATION.—There are author-  
18 ized to be appropriated to the Director of the Na-  
19 tional Science Foundation to carry out activities de-  
20 scribed in paragraph (1) through the Course, Cur-  
21 riculum, and Laboratory Improvement program—

22                   (A) from amounts authorized under section  
23 7002(b)(2)(B) of the America COMPETES  
24 Act, \$5,000,000 for fiscal year 2009; and

1 (B) from amounts authorized under sec-  
2 tion 7002(e)(2)(B) of the America COMPETES  
3 Act, \$5,000,000 for fiscal year 2010.

4 (3) ADVANCED TECHNOLOGY EDUCATION AU-  
5 THORIZATION.—There are authorized to be appro-  
6 priated to the Director of the National Science  
7 Foundation to carry out activities described in para-  
8 graph (1) through the Advanced Technology Edu-  
9 cation program—

10 (A) from amounts authorized under section  
11 7002(b)(2)(B) of the America COMPETES  
12 Act, \$5,000,000 for fiscal year 2009; and

13 (B) from amounts authorized under sec-  
14 tion 7002(e)(2)(B) of the America COMPETES  
15 Act, \$5,000,000 for fiscal year 2010.

16 (e) INTERAGENCY WORKING GROUP.—The National  
17 Science and Technology Council shall establish under the  
18 Nanoscale Science, Engineering, and Technology Sub-  
19 committee an Education Working Group to coordinate,  
20 prioritize, and plan the educational activities supported  
21 under the Program.

22 (f) SOCIETAL DIMENSIONS IN NANOTECHNOLOGY  
23 EDUCATION ACTIVITIES.—Activities supported under the  
24 Education and Societal Dimensions program component  
25 area, or any successor program component area, that in-

1    volve    informal,    precollege,    or    undergraduate  
2    nanotechnology education shall include education regard-  
3    ing the environmental, health and safety, and other soci-  
4    etal aspects of nanotechnology.

5           (g) REMOTE ACCESS TO NANOTECHNOLOGY FACILI-  
6    TIES.—(1) Agencies supporting nanotechnology research  
7    facilities as part of the Program shall require the entities  
8    that operate such facilities to allow access via the Internet,  
9    and support the costs associated with the provision of such  
10   access, by secondary school students and teachers, to in-  
11   struments and equipment within such facilities for edu-  
12   cational purposes. The agencies may waive this require-  
13   ment for cases when particular facilities would be inappro-  
14   priate for educational purposes or the costs for providing  
15   such access would be prohibitive.

16           (2) The agencies identified in paragraph (1) shall re-  
17   quire the entities that operate such nanotechnology re-  
18   search facilities to establish and publish procedures, guide-  
19   lines, and conditions for the submission and approval of  
20   applications for the use of the facilities for the purpose  
21   identified in paragraph (1) and shall authorize personnel  
22   who operate the facilities to provide necessary technical  
23   support to students and teachers.

24   **SEC. 4. TECHNOLOGY TRANSFER.**

25           (a) PROTOTYPING.—

1           (1) ACCESS TO FACILITIES.—In accordance  
2 with section 2(b)(7) of 21st Century Nanotechnology  
3 Research and Development Act (15 U.S.C.  
4 7501(b)(7)), the agencies supporting nanotechnology  
5 research facilities as part of the Program shall pro-  
6 vide access to such facilities to companies for the  
7 purpose of assisting the companies in the develop-  
8 ment of prototypes of nanoscale products, devices, or  
9 processes (or products, devices, or processes enabled  
10 by nanotechnology) for determining proof of concept.  
11 The agencies shall publicize the availability of these  
12 facilities and encourage their use by companies as  
13 provided for in this section.

14           (2) PROCEDURES.—The agencies identified in  
15 paragraph (1)—

16                   (A) shall establish and publish procedures,  
17 guidelines, and conditions for the submission  
18 and approval of applications for use of  
19 nanotechnology facilities;

20                   (B) shall publish descriptions of the capa-  
21 bilities of facilities available for use under this  
22 subsection, including the availability of tech-  
23 nical support; and

24                   (C) may waive recovery, require full recov-  
25 ery, or require partial recovery of the costs as-

1           sociated with use of the facilities for projects  
2           under this subsection.

3           (3) SELECTION AND CRITERIA.—In cases when  
4           less than full cost recovery is required pursuant to  
5           paragraph (2)(C), projects provided access to  
6           nanotechnology facilities in accordance with this sub-  
7           section shall be selected through a competitive,  
8           merit-based process, and the criteria for the selec-  
9           tion of such projects shall include at a minimum—

10                   (A) the readiness of the project for tech-  
11                   nology demonstration;

12                   (B) evidence of a commitment by the ap-  
13                   plicant for further development of the project to  
14                   full commercialization if the proof of concept is  
15                   established by the prototype; and

16                   (C) evidence of the potential for further  
17                   funding from private sector sources following  
18                   the successful demonstration of proof of con-  
19                   cept.

20           The agencies may give special consideration in se-  
21           lecting projects to applications that are relevant to  
22           important national needs or requirements.

23           (b) USE OF EXISTING TECHNOLOGY TRANSFER PRO-  
24           GRAMS.—

1           (1) PARTICIPATING AGENCIES.—Each agency  
2 participating in the Program shall—

3           (A) encourage the submission of applica-  
4 tions for support of nanotechnology related  
5 projects to the Small Business Innovation Re-  
6 search Program and the Small Business Tech-  
7 nology Transfer Program administered by such  
8 agencies; and

9           (B) through the National Nanotechnology  
10 Coordination Office and within 6 months after  
11 the date of enactment of this Act, submit to the  
12 Committee on Commerce, Science, and Trans-  
13 portation of the Senate and the Committee on  
14 Science and Technology of the House of Rep-  
15 resentatives—

16           (i) the plan described in section  
17 2(c)(7) of the 21st Century  
18 Nanotechnology Research and Develop-  
19 ment Act (15 U.S.C. 7501(c)(7)); and

20           (ii) a report specifying, if the agency  
21 administers a Small Business Innovation  
22 Research Program and a Small Business  
23 Technology Transfer Program—

24           (I) the number of proposals re-  
25 ceived for nanotechnology related

1 projects during the current fiscal year  
2 and the previous 2 fiscal years;

3 (II) the number of such pro-  
4 posals funded in each year;

5 (III) the total number of  
6 nanotechnology related projects fund-  
7 ed and the amount of funding pro-  
8 vided for fiscal year 2003 through fis-  
9 cal year 2007; and

10 (IV) a description of the projects  
11 identified in accordance with sub-  
12 clause (III) which received private sec-  
13 tor funding beyond the period of  
14 phase II support.

15 (2) NATIONAL INSTITUTE OF STANDARDS AND  
16 TECHNOLOGY.—The Director of the National Insti-  
17 tute of Standards and Technology in carrying out  
18 the requirements of section 28 of the National Insti-  
19 tute of Standards and Technology Act (15 U.S.C.  
20 278n) shall—

21 (A) in regard to subsection (d) of that sec-  
22 tion, encourage the submission of proposals for  
23 support of nanotechnology related projects; and

24 (B) in regard to subsection (g) of that sec-  
25 tion, include a description of how the require-

1           ment of subparagraph (A) of this paragraph is  
2           being met, the number of proposals for  
3           nanotechnology related projects received, the  
4           number of such proposals funded, the total  
5           number of such projects funded since the begin-  
6           ning of the Technology Innovation Program,  
7           and the outcomes of such funded projects in  
8           terms of the metrics developed in accordance  
9           with such subsection (g).

10           (3) TIP ADVISORY BOARD.—The TIP Advisory  
11           Board established under section 28(k) of the Na-  
12           tional Institute of Standards and Technology Act  
13           (15 U.S.C. 278n(k)), in carrying out its responsibil-  
14           ities under subsection (k)(3), shall provide the Di-  
15           rector of the National Institute of Standards and  
16           Technology with—

17                   (A) advice on how to accomplish the re-  
18                   quirement of paragraph (2)(A) of this sub-  
19                   section; and

20                   (B) an assessment of the adequacy of the  
21                   allocation of resources for nanotechnology re-  
22                   lated projects supported under the Technology  
23                   Innovation Program.

24           (c) INDUSTRY LIAISON GROUPS.—An objective of the  
25           Program shall be to establish industry liaison groups for

1 all industry sectors that would benefit from applications  
2 of nanotechnology. The Nanomanufacturing, Industry Li-  
3 aison, and Innovation Working Group of the National  
4 Science and Technology Council shall actively pursue es-  
5 tablishing such liaison groups.

6 (d) COORDINATION WITH STATE INITIATIVES.—Sec-  
7 tion 2(b)(5) of the 21st Century Nanotechnology Research  
8 and Development Act (15 U.S.C. 7501(b)(5)) is amended  
9 to read as follows:

10 “(5) ensuring United States global leadership in  
11 the development and application of nanotechnology,  
12 including through coordination and leveraging Fed-  
13 eral investments with nanotechnology research, de-  
14 velopment, and technology transition initiatives sup-  
15 ported by the States;”.

16 **SEC. 5. RESEARCH IN AREAS OF NATIONAL IMPORTANCE.**

17 (a) IN GENERAL.—The Program shall include sup-  
18 port for nanotechnology research and development activi-  
19 ties directed toward application areas that have the poten-  
20 tial for significant contributions to national economic com-  
21 petitiveness and for other significant societal benefits. The  
22 activities supported shall be designed to advance the devel-  
23 opment of research discoveries by demonstrating technical  
24 solutions to important problems in such areas as nano-  
25 electronics, energy efficiency, health care, and water reme-

1 diation and purification. The Advisory Panel shall make  
2 recommendations to the Program for candidate research  
3 and development areas for support under this section.

4 (b) CHARACTERISTICS.—

5 (1) IN GENERAL.—Research and development  
6 activities under this section shall—

7 (A) include projects selected on the basis  
8 of applications for support through a competi-  
9 tive, merit-based process;

10 (B) involve collaborations among research-  
11 ers in academic institutions and industry, and  
12 may involve nonprofit research institutions and  
13 Federal laboratories, as appropriate;

14 (C) when possible, leverage Federal invest-  
15 ments through collaboration with related State  
16 initiatives; and

17 (D) include a plan for fostering the trans-  
18 fer of research discoveries and the results of  
19 technology demonstration activities to industry  
20 for commercial development.

21 (2) PROCEDURES.—Determination of the re-  
22 quirements for applications under this subsection,  
23 review and selection of applications for support, and  
24 subsequent funding of projects shall be carried out  
25 by a collaboration of no fewer than 2 agencies par-

1        participating in the Program. In selecting applications  
2        for support, the agencies shall give special consider-  
3        ation to projects that include cost sharing from non-  
4        Federal sources.

5            (3) INTERDISCIPLINARY RESEARCH CENTERS.—  
6        Research and development activities under this sec-  
7        tion may be supported through interdisciplinary  
8        nanotechnology research centers, as authorized by  
9        section 2(b)(4) of the 21st Century Nanotechnology  
10       Research and Development Act (15 U.S.C.  
11       7501(b)(4)), that are organized to investigate basic  
12       research questions and carry out technology dem-  
13       onstration activities in areas such as those identified  
14       in subsection (a).

15        (c) REPORT.—Reports required under section 2(d) of  
16       the 21st Century Nanotechnology Research and Develop-  
17       ment Act (15 U.S.C. 7501(d)) shall include a description  
18       of research and development areas supported in accord-  
19       ance with this section, including the same budget informa-  
20       tion as is required for program component areas under  
21       paragraphs (1) and (2) of such section 2(d).

22        **SEC. 6. NANOMANUFACTURING RESEARCH.**

23        (a) RESEARCH AREAS.—The Nanomanufacturing  
24       program component area, or any successor program com-  
25       ponent area, shall include research on—

1           (1) development of instrumentation and tools  
2           required for the rapid characterization of nanoscale  
3           materials and for monitoring of nanoscale manufac-  
4           turing processes; and

5           (2) approaches and techniques for scaling the  
6           synthesis of new nanoscale materials to achieve in-  
7           dustrial-level production rates.

8           (b) GREEN NANOTECHNOLOGY.—Interdisciplinary re-  
9           search centers supported under the Program in accord-  
10          ance with section 2(b)(4) of the 21st Century  
11          Nanotechnology Research and Development Act (15  
12          U.S.C. 7501(b)(4)) that are focused on  
13          nanomanufacturing research and centers established  
14          under the authority of section 5(b)(3) of this Act shall  
15          include as part of the activities of such centers—

16           (1) research on methods and approaches to de-  
17           velop environmentally benign nanoscale products and  
18           nanoscale manufacturing processes, taking into con-  
19           sideration relevant findings and results of research  
20           supported under the Environmental, Health, and  
21           Safety program component area, or any successor  
22           program component area;

23           (2) fostering the transfer of the results of such  
24           research to industry; and

1           (3) providing for the education of scientists and  
2 engineers through interdisciplinary studies in the  
3 principles and techniques for the design and develop-  
4 ment of environmentally benign nanoscale products  
5 and processes.

6           (c) REVIEW OF NANOMANUFACTURING RESEARCH  
7 AND RESEARCH FACILITIES.—

8           (1) PUBLIC MEETING.—Not later than 12  
9 months after the date of enactment of this Act, the  
10 National Nanotechnology Coordination Office shall  
11 sponsor a public meeting, including representation  
12 from a wide range of industries engaged in  
13 nanoscale manufacturing, to—

14           (A) obtain the views of participants at the  
15 meeting on—

16           (i) the relevance and value of the re-  
17 search being carried out under the  
18 Nanomanufacturing program component  
19 area of the Program, or any successor pro-  
20 gram component area; and

21           (ii) whether the capabilities of  
22 nanotechnology research facilities sup-  
23 ported under the Program are adequate—

24           (I) to meet current and near-  
25 term requirements for the fabrication

1 and characterization of nanoscale de-  
2 vices and systems; and

3 (II) to provide access to and use  
4 of instrumentation and equipment at  
5 the facilities, by means of networking  
6 technology, to individuals who are at  
7 locations remote from the facilities;  
8 and

9 (B) receive any recommendations on ways  
10 to strengthen the research portfolio supported  
11 under the Nanomanufacturing program compo-  
12 nent area, or any successor program component  
13 area, and on improving the capabilities of  
14 nanotechnology research facilities supported  
15 under the Program.

16 Companies participating in industry liaison groups  
17 shall be invited to participate in the meeting. The  
18 Coordination Office shall prepare a report docu-  
19 menting the findings and recommendations resulting  
20 from the meeting.

21 (2) ADVISORY PANEL REVIEW.—The Advisory  
22 Panel shall review the Nanomanufacturing program  
23 component area of the Program, or any successor  
24 program component area, and the capabilities of

1 nanotechnology research facilities supported under  
2 the Program to assess—

3 (A) whether the funding for the  
4 Nanomanufacturing program component area,  
5 or any successor program component area, is  
6 adequate and receiving appropriate priority  
7 within the overall resources available for the  
8 Program;

9 (B) the relevance of the research being  
10 supported to the identified needs and require-  
11 ments of industry;

12 (C) whether the capabilities of  
13 nanotechnology research facilities supported  
14 under the Program are adequate—

15 (i) to meet current and near-term re-  
16 quirements for the fabrication and charac-  
17 terization of nanoscale devices and sys-  
18 tems; and

19 (ii) to provide access to and use of in-  
20 strumentation and equipment at the facili-  
21 ties, by means of networking technology, to  
22 individuals who are at locations remote  
23 from the facilities; and

24 (D) the level of funding that would be  
25 needed to support—

1 (i) the acquisition of instrumentation,  
2 equipment, and networking technology suf-  
3 ficient to provide the capabilities at  
4 nanotechnology research facilities described  
5 in subparagraph (C); and

6 (ii) the operation and maintenance of  
7 such facilities.

8 In carrying out its assessment, the Advisory Panel  
9 shall take into consideration the findings and rec-  
10 ommendations from the report required under para-  
11 graph (1).

12 (3) REPORT.—Not later than 18 months after  
13 the date of enactment of this Act, the Advisory  
14 Panel shall submit to the Committee on Commerce,  
15 Science, and Transportation of the Senate and the  
16 Committee on Science and Technology of the House  
17 of Representatives a report on its assessment re-  
18 quired under paragraph (2), along with any rec-  
19 ommendations and a copy of the report prepared in  
20 accordance with paragraph (1).

21 **SEC. 7. DEFINITIONS.**

22 In this Act, terms that are defined in section 10 of  
23 the 21st Century Nanotechnology Research and Develop-

1 ment Act (15 U.S.C. 7509) have the meaning given those  
2 terms in that section.

Passed the House of Representatives June 5, 2008.

Attest:

*Clerk.*



110<sup>TH</sup> CONGRESS  
2<sup>D</sup> SESSION

**H. R. 5940**

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**AN ACT**

To authorize activities for support of nanotechnology research and development, and for other purposes.