

Biomedical Engineering Program and Research to Aid Persons with Disabilities Program (BME/RAPD)

Program Solicitation

NSF 03-560

Replaces Document NSF 01-12



National Science Foundation

Directorate for Engineering

Division of Bioengineering and Environmental Systems

Submission Window:

September 01, 2003 - October 15, 2003

Proposals (except for Biophotonics) will be accepted annually between September 1 and October 15. There are no deadlines for Undergraduate Design Project proposals.

December 15, 2003 - February 01, 2004

Proposals for Biophotonics will be accepted annually between December 15 and February 1 of the following year.

SUMMARY OF PROGRAM REQUIREMENTS

General Information

Program Title:

Biomedical Engineering Program and Research to Aid Persons with Disabilities Program (BME/RAPD)

Synopsis of Program:

The BME/RAPD programs encompass (a) the Biomedical Engineering program (BME) and (b) the Research to Aid Persons with Disabilities program (RAPD). The Biophotonics area is part of BME but is broken out separately because of its rapid growth in size and scope. Biomedical Engineering supports research that, often with diagnosis or treatment-related goals, applies engineering principles to problems in biology and medicine while advancing the engineering knowledge base. Integration of engineering expertise with life science principles is an essential requirement for advances in this field. The RAPD program supports the development of technologies for new and improved devices or software for persons with disabilities. Current areas of particular interest in BME/RAPD are biomedical photonics; novel tissue characterization schemes; new cellular and tissue engineering concepts; the innovative integration of multi-disciplinary technologies for new imaging and biosensing systems; and, home care technologies related to chronic illness, persons with disabilities, and the aging. Support is provided through submission of unsolicited proposals as well as through special initiatives. Additional information about BME/RAPD is found at <http://www.eng.nsf.gov/bes/>.

Cognizant Program Officer(s):

- Semahat S. Demir, Program Director, Directorate for Engineering, Division of Bioengineering & Environmental Systems, 565 S, telephone: (703) 292-7950, fax: (703) 292-9098, email: sdemir@nsf.gov
- Leon Esterowitz, Program Director, Directorate for Engineering, Division of Bioengineering & Environmental Systems, 565 S, telephone: (703) 292-7942, fax: (703) 292-9098, email: lesterow@nsf.gov
- Gilbert Devey, Program Director, Directorate for Engineering, Division of Bioengineering & Environmental Systems, 565 S, telephone: (703) 292-7943, fax: (703) 292-9098, email: gdevey@nsf.gov

Applicable Catalog of Federal Domestic Assistance (CFDA) Number(s):

- 47.041 --- Engineering

Eligibility Information

- **Organization Limit:** None Specified.
- **PI Eligibility Limit:** None Specified.
- **Limit on Number of Proposals:** None Specified.

Award Information

- **Anticipated Type of Award:** Standard or Continuing Grant
- **Estimated Number of Awards:** 35
- **Anticipated Funding Amount:** \$3,000,000 It is expected that \$3 million will be available annually for this competition, subject to the availability of funds; \$80,000 to \$110,000 per research award annually for BME/RAPD; up to \$200,000 annually for Biophotonics, and \$2,000 to \$25,000 per design project award annually. See [Section IV. AWARD INFORMATION](#).

Proposal Preparation and Submission Instructions

A. Proposal Preparation Instructions

- **Full Proposal Preparation Instructions:** Standard GPG Guidelines apply.

B. Budgetary Information

- **Cost Sharing Requirements:** Cost Sharing is not required.
- **Indirect Cost (F&A) Limitations:** Not Applicable.
- **Other Budgetary Limitations:** Other budgetary limitations apply. Please see the full text of this solicitation for further information.

C. Due Dates

- **Submission Window:**
 - September 01, 2003 - October 15, 2003
Proposals (except for Biophotonics) will be accepted annually between September 1 and October 15. There are no deadlines for Undergraduate Design Project proposals.
 - December 15, 2003 - February 01, 2004
Proposals for Biophotonics will be accepted annually between December 15 and February 1 of the following year.

Proposal Review Information

- **Merit Review Criteria:** National Science Board approved criteria apply.

Award Administration Information

- **Award Conditions:** Additional award conditions apply. Please see the full text of this solicitation for further information.
- **Reporting Requirements:** Additional reporting requirements apply. Please see the full text of this solicitation for further information.

TABLE OF CONTENTS

Summary of Program Requirements

- I. **Introduction**
- II. **Program Description**
- III. **Eligibility Information**
- IV. **Award Information**
- V. **Proposal Preparation and Submission Instructions**
 - A. Proposal Preparation Instructions
 - B. Budgetary Information
 - C. Due Dates
 - D. FastLane Requirements
- VI. **Proposal Review Information**
 - A. NSF Proposal Review Process
 - B. Review Protocol and Associated Customer Service Standard
- VII. **Award Administration Information**
 - A. Notification of the Award
 - B. Award Conditions
 - C. Reporting Requirements
- VIII. **Contacts for Additional Information**
- IX. **Other Programs of Interest**

I. INTRODUCTION

The mission of the BME/RAPD is to provide opportunities to develop novel ideas into projects that integrate engineering and life science principles in solving biomedical problems to serve humanity. The program focuses on high impact transforming technologies for deriving information from cells, tissues, organs, and organ systems, extraction of useful information from complex biomedical signals, new approaches to the design of structures and materials for eventual medical use, and new

methods of controlling living systems. BME/RAPD is also directed toward the characterization, restoration, and/or substitution of normal functions in humans. Emphasis is placed on significant advancement of fundamental engineering knowledge and not on incremental improvements. Undergraduate engineering design projects are also supported, especially those that provide prototype "custom-designed" devices or software for persons with mental and/or physical disabilities. The BME/RAPD programs do not support clinical studies but initial evaluation in a clinical setting is encouraged. Continued growth of the field depends on the availability of highly skilled individuals needed for the next generation work force. Principal Investigators (PIs) of research projects are expected to include a strong educational component in their proposed work plan. The education of undergraduate engineering students is enhanced through Undergraduate Design Projects' awards supported by the BME/RAPD program. PIs are encouraged to apply for supplemental funding under the Research Experience for Undergraduates (REU) Program (NSF 00-107).

II. PROGRAM DESCRIPTION

PROPOSAL CATEGORIES

A. Investigator-initiated Research Proposals:

Research in bioengineering, with diagnosis or treatment-related goals, that applies engineering principals to problems in biology and medicine while advancing engineering knowledge is eligible for support. Bioengineering research to aid persons with disabilities also is eligible. Applicants are required to include in the project description the engineering principles to be applied and the advances anticipated in engineering knowledge as an outcome of the work. Since the field is characterized by its strong multi-disciplinary nature, priority will be given to projects that are dependent on fundamental knowledge of both engineering and the life sciences. An appropriate balance between theory and experiment is encouraged. The BME/RAPD Programs support group and GOALI (NSF 98-142) awards. The areas of interest include models and tools for understanding and control of biological systems; fundamental improvements in deriving information from cells, tissues, organs, and organ systems; new approaches to the design of structures and materials for eventual medical use; and, new methods of reducing health care costs through new technologies. BME/RAPD also supports research directed toward the characterization, restoration, and substitution of normal functions in humans. Emphasis is on the advancement of fundamental engineering knowledge that leads to the development of new technologies or to the novel application of existing technologies. Areas of research interest include:

- Biophotonics
- Biomedical sensing and imaging systems
- Cellular and tissue engineering with a focus on functional aspects of tissue engineering
- Biomedical implants
- Research to aid persons with disabilities
- Home Care Technologies

B. Undergraduate Design Projects.

Proposals requesting support for undergraduate student engineers or engineering technology students to provide prototype "custom designed" devices and software to aid persons with disabilities are welcome. The primary goal of this thrust is to provide a meaningful design experience for the engineering student that will directly aid a specific disabled individual. The expectation is that this "real world" experience will give engineering students a sense of purpose and pride, help engineering schools serve the community, attract new students into engineering, and raise student interest in graduate education. In addition to the guidelines contained in the NSF Grant Proposal Guide, the following requirements apply to the proposals requesting support for Undergraduate Design Projects:

- Project costs may include: equipment, materials, parts and machining time. Other allowable costs include up to 1/2 month's PI summer salary support for preparation of the annual report of student projects, or 1/4 time graduate assistant. The budget may include additional support for a domestic trip to a scientific meeting for the PI and a

selected student (e.g., to enter the project into a student paper competition), and/or summer support of undergraduate students directly involved in the project; these additional costs should not exceed 30% of project costs.

- The proposal must include a short description of ten possible design projects. These projects should be suitable for an undergraduate student, or a small team of students, to complete in about one year. The proposal should include a letter of support from an appropriate administrator of an institution providing care or education for the disabled. The letter should certify that the institution and the university will work cooperatively on the design projects.
- The proposal should include a statement that the PI will provide, by July 1 of each grant year, an annual report that will include a description of the successfully completed design projects during the previous academic year. The intention is to combine individual reports, with appropriate editorial comments, into a book for general distribution. The purpose of the book will be to document accomplishments and to provide guidance in teaching engineering design. The desired format of the report is described in section VII. C. AWARD ADMINISTRATION INFORMATION.

It is expected that each grantee will implement a high percentage of projects. It is also expected that the projects will contain appropriate levels of quantitative engineering analysis. Continued funding for years beyond an initial year of support will be based on the quality of projects, how well the design experience of the students is integrated with the rest of their academic program, the number of successfully implemented projects, and the availability of funds.

III. ELIGIBILITY INFORMATION

The categories of proposers identified in the [Grant Proposal Guide](#) are eligible to submit proposals under this program announcement/solicitation.

IV. AWARD INFORMATION

It is expected that \$3 million will be available annually for this competition, subject to the availability of funds.

A. Research Awards: Typically 3 years. Mix of standard and continuing. \$80,000 to \$110,000 total budget (including indirect cost) per research award annually for BME/RAPD; up to \$200,000 total budget (including indirect cost) annually for Biophotonics.

B. Undergraduate Design Projects: Typically 5 years. Continuing. \$2,000 to \$25,000 per design project award annually. Special report provision (see VII. AWARD ADMINISTRATION INFORMATION. C. Reporting Requirements).

V. PROPOSAL PREPARATION AND SUBMISSION INSTRUCTIONS

A. Proposal Preparation Instructions

Full Proposal Instructions:

Proposals submitted in response to this program announcement/solicitation should be prepared and submitted in accordance with the general guidelines contained in the NSF *Grant Proposal Guide* (GPG). The complete text of the GPG is available electronically on the NSF Website at: <http://www.nsf.gov/cgi-bin/getpub?gpg>. Paper copies of the GPG may be obtained from the NSF Publications Clearinghouse, telephone (703) 292-7827 or by e-mail from pubs@nsf.gov.

Proposers are reminded to identify the program announcement/solicitation number (03-560) in the program announcement/solicitation block on the NSF *Cover Sheet For Proposal to the National Science Foundation*. Compliance with this requirement is critical to determining the relevant proposal processing guidelines. Failure to submit this information may delay processing.

B. Budgetary Information

Cost Sharing:

Cost sharing is not required in proposals submitted under this Program Solicitation.

Other Budgetary Limitations:

See Section IV. Award Information B. Undergraduate Design Projects.

C. Due Dates

Proposals must be submitted by the following date(s):

Submission Window Date(s):

September 01, 2003 - October 15, 2003

Proposals (except for Biophotonics) will be accepted annually between September 1 and October 15. There are no deadlines for Undergraduate Design Project proposals.

December 15, 2003 - February 01, 2004

Proposals for Biophotonics will be accepted annually between December 15 and February 1 of the following year.

D. FastLane Requirements

Proposers are required to prepare and submit all proposals for this announcement/solicitation through the FastLane system. Detailed instructions for proposal preparation and submission via FastLane are available at: <https://www.fastlane.nsf.gov/a1/newstan.htm>. For FastLane user support, call the FastLane Help Desk at 1-800-673-6188 or e-mail fastlane@nsf.gov. The FastLane Help Desk answers general technical questions related to the use of the FastLane system. Specific questions related to this program announcement/solicitation should be referred to the NSF program staff contact(s) listed in Section VIII of this announcement/solicitation.

Submission of Electronically Signed Cover Sheets. The Authorized Organizational Representative (AOR) must electronically sign the proposal Cover Sheet to submit the required proposal certifications (see Chapter II, Section C of the [Grant Proposal Guide](#) for a listing of the certifications). The AOR must provide the required electronic certifications within five working days following the electronic submission of the proposal. Proposers are no longer required to provide a paper copy of the signed Proposal Cover Sheet to NSF. Further instructions regarding this process are available on the FastLane Website at: <http://www.fastlane.nsf.gov>

VI. PROPOSAL REVIEW INFORMATION

Reviews of proposals submitted to NSF are solicited from peers with expertise in the substantive area of the proposed research or education project. These reviewers are selected by Program Officers charged with the oversight of the review process. NSF invites the proposer to suggest, at the time of submission, the names of appropriate or inappropriate reviewers. Care is taken to ensure that reviewers have no conflicts with the proposer. Special efforts are made to recruit reviewers from non-academic institutions, minority-serving institutions, or adjacent disciplines to that principally addressed in the proposal.

The National Science Board approved revised criteria for evaluating proposals at its meeting on March 28, 1997 ([NSB 97-72](#)). All NSF proposals are evaluated through use of the two merit review criteria. In some instances, however, NSF will employ additional criteria as required to highlight the specific objectives of certain programs and activities.

On July 8, 2002, the NSF Director issued [Important Notice 127](#), Implementation of new Grant Proposal Guide Requirements Related to the Broader Impacts Criterion. This Important Notice reinforces the importance of addressing both criteria in the preparation and review of all proposals submitted to NSF. NSF continues to strengthen its internal processes to ensure that both of the merit review criteria are addressed when making funding decisions.

In an effort to increase compliance with these requirements, the January 2002 issuance of the GPG incorporated revised proposal preparation guidelines relating to the development of the Project Summary and Project Description. Chapter II of the GPG specifies that Principal Investigators (PIs) must address both merit review criteria in separate statements within the one-page Project Summary. This chapter also reiterates that broader impacts resulting from the proposed project must be addressed in the Project Description and described as an integral part of the narrative.

Effective October 1, 2002, NSF will return without review proposals that do not separately address both merit review criteria within the Project Summary. It is believed that these changes to NSF proposal preparation and processing guidelines will more clearly articulate the importance of broader impacts to NSF-funded projects.

The two National Science Board approved merit review criteria are listed below (see the [Grant Proposal Guide](#) Chapter III.A for further information). The criteria include considerations that help define them. These considerations are suggestions and not all will apply to any given proposal. While proposers must address both merit review criteria, reviewers will be asked to address only those considerations that are relevant to the proposal being considered and for which he/she is qualified to make judgments.

What is the intellectual merit of the proposed activity?

How important is the proposed activity to advancing knowledge and understanding within its own field or across different fields? How well qualified is the proposer (individual or team) to conduct the project? (If appropriate, the reviewer will comment on the quality of the prior work.) To what extent does the proposed activity suggest and explore creative and original concepts? How well conceived and organized is the proposed activity? Is there sufficient access to resources?

What are the broader impacts of the proposed activity?

How well does the activity advance discovery and understanding while promoting teaching, training, and learning? How well does the proposed activity broaden the participation of underrepresented groups (e.g., gender, ethnicity, disability, geographic, etc.)? To what extent will it enhance the infrastructure for research and education, such as facilities, instrumentation, networks, and partnerships? Will the results be disseminated broadly to enhance scientific and technological understanding? What may be the benefits of the proposed activity to society?

NSF staff will give careful consideration to the following in making funding decisions:

Integration of Research and Education

One of the principal strategies in support of NSF's goals is to foster integration of research and education through the programs, projects, and activities it supports at academic and research institutions. These institutions provide

abundant opportunities where individuals may concurrently assume responsibilities as researchers, educators, and students and where all can engage in joint efforts that infuse education with the excitement of discovery and enrich research through the diversity of learning perspectives.

Integrating Diversity into NSF Programs, Projects, and Activities

Broadening opportunities and enabling the participation of all citizens -- women and men, underrepresented minorities, and persons with disabilities -- is essential to the health and vitality of science and engineering. NSF is committed to this principle of diversity and deems it central to the programs, projects, and activities it considers and supports.

B. Review Protocol and Associated Customer Service Standard

All proposals are carefully reviewed by at least three other persons outside NSF who are experts in the particular field represented by the proposal. Proposals submitted in response to this announcement/solicitation will be reviewed by Ad Hoc and/or panel review.

Reviewers will be asked to formulate a recommendation to either support or decline each proposal. The Program Officer assigned to manage the proposal's review will consider the advice of reviewers and will formulate a recommendation.

A summary rating and accompanying narrative will be completed and submitted by each reviewer. In all cases, reviews are treated as confidential documents. Verbatim copies of reviews, excluding the names of the reviewers, are sent to the Principal Investigator/Project Director by the Program Director. In addition, the proposer will receive an explanation of the decision to award or decline funding.

NSF is striving to be able to tell proposers whether their proposals have been declined or recommended for funding within six months. The time interval begins on the closing date of an announcement/solicitation, or the date of proposal receipt, whichever is later. The interval ends when the Division Director accepts the Program Officer's recommendation.

In all cases, after programmatic approval has been obtained, the proposals recommended for funding will be forwarded to the Division of Grants and Agreements for review of business, financial, and policy implications and the processing and issuance of a grant or other agreement. Proposers are cautioned that only a Grants and Agreements Officer may make commitments, obligations or awards on behalf of NSF or authorize the expenditure of funds. No commitment on the part of NSF should be inferred from technical or budgetary discussions with a NSF Program Officer. A Principal Investigator or organization that makes financial or personnel commitments in the absence of a grant or cooperative agreement signed by the NSF Grants and Agreements Officer does so at their own risk.

VII. AWARD ADMINISTRATION INFORMATION

A. Notification of the Award

Notification of the award is made to *the submitting organization* by a Grants Officer in the Division of Grants and Agreements. Organizations whose proposals are declined will be advised as promptly as possible by the cognizant NSF Program Division administering the program. Verbatim copies of reviews, not including the identity of the reviewer, will be provided automatically to the Principal Investigator. (See section VI.A. for additional information on the review process.)

B. Award Conditions

An NSF award consists of: (1) the award letter, which includes any special provisions applicable to the award and any numbered amendments thereto; (2) the budget, which indicates the amounts, by categories of expense, on which NSF has

based its support (or otherwise communicates any specific approvals or disapprovals of proposed expenditures); (3) the proposal referenced in the award letter; (4) the applicable award conditions, such as Grant General Conditions (NSF-GC-1); * or Federal Demonstration Partnership (FDP) Terms and Conditions * and (5) any announcement or other NSF issuance that may be incorporated by reference in the award letter. Cooperative agreement awards also are administered in accordance with NSF Cooperative Agreement Terms and Conditions (CA-1). Electronic mail notification is the preferred way to transmit NSF awards to organizations that have electronic mail capabilities and have requested such notification from the Division of Grants and Agreements.

*These documents may be accessed electronically on NSF's Website at http://www.nsf.gov/home/grants/grants_gac.htm. Paper copies may be obtained from the NSF Publications Clearinghouse, telephone (703) 292-7827 or by e-mail from pubs@nsf.gov.

More comprehensive information on NSF Award Conditions is contained in the NSF *Grant Policy Manual* (GPM) Chapter II, available electronically on the NSF Website at <http://www.nsf.gov/cgi-bin/getpub?gpm>. The GPM is also for sale through the Superintendent of Documents, Government Printing Office (GPO), Washington, DC 20402. The telephone number at GPO for subscription information is (202) 512-1800. The GPM may be ordered through the GPO Website at <http://www.gpo.gov>.

Special Award Conditions:

For Undergraduate Design Projects a report is due by July 1 of each grant year as described under Reporting Requirements below. This is in addition to the annual project reports.

C. Reporting Requirements

For all multi-year grants (including both standard and continuing grants), the PI must submit an annual project report to the cognizant Program Officer at least 90 days before the end of the current budget period.

Additional Requirements for Undergraduate Design Projects' awards: In addition to the project report requirements of FDP IV, NSF ASR, Article 8 or GC-1, Article 15, the PI will provide by July 1st of each grant year, a two page report for each implemented project which includes the following:

Page 1

A photograph of the prototype device. Describe, in layman's terms, the device and its impact upon the individual who received the device.

Page 2

A technical description and the approximate cost of the device.

It is NSF's intention to compile the reports from all the grant recipients into a yearly report for general distribution. NSF expects that each grantee will actually implement a very high percentage of projects. Continued funding for years beyond the initial support of the grant will be based on the number and quality of the implemented devices in the previous years and the availability of funds.

Awardees will be notified to whom and where the special reports should be submitted.

For all awards:

Within 90 days after the expiration of an award, the PI also is required to submit a final project report. Failure to provide final

technical reports delays NSF review and processing of pending proposals for the PI and all Co-PIs. PIs should examine the formats of the required reports in advance to assure availability of required data.

PIs are required to use NSF's electronic project reporting system, available through FastLane, for preparation and submission of annual and final project reports. This system permits electronic submission and updating of project reports, including information on project participants (individual and organizational), activities and findings, publications, and other specific products and contributions. PIs will not be required to re-enter information previously provided, either with a proposal or in earlier updates using the electronic system.

VIII. CONTACTS FOR ADDITIONAL INFORMATION

General inquiries regarding this program should be made to:

- Semahat S. Demir, Program Director, Directorate for Engineering, Division of Bioengineering & Environmental Systems, 565 S, telephone: (703) 292-7950, fax: (703) 292-9098, email: sdemir@nsf.gov
- Leon Esterowitz, Program Director, Directorate for Engineering, Division of Bioengineering & Environmental Systems, 565 S, telephone: (703) 292-7942, fax: (703) 292-9098, email: lesterow@nsf.gov
- Gilbert Devey, Program Director, Directorate for Engineering, Division of Bioengineering & Environmental Systems, 565 S, telephone: (703) 292-7943, fax: (703) 292-9098, email: gdevey@nsf.gov

For questions related to the use of FastLane, contact:

- Marcia Rawlings, Directorate for Engineering, Division of Bioengineering & Environmental Systems, 565 S, telephone: (703) 292-7956, fax: (703) 292-9098, email: mrawling@nsf.gov

IX. OTHER PROGRAMS OF INTEREST

The NSF *Guide to Programs* is a compilation of funding for research and education in science, mathematics, and engineering. The NSF *Guide to Programs* is available electronically at <http://www.nsf.gov/cgi-bin/getpub?gp>. General descriptions of NSF programs, research areas, and eligibility information for proposal submission are provided in each chapter.

Many NSF programs offer announcements or solicitations concerning specific proposal requirements. To obtain additional information about these requirements, contact the appropriate NSF program offices. Any changes in NSF's fiscal year programs occurring after press time for the *Guide to Programs* will be announced in the NSF *E-Bulletin*, which is updated daily on the NSF Website at <http://www.nsf.gov/home/ebulletin>, and in individual program announcements/solicitations. Subscribers can also sign up for NSF's *Custom News Service* (<http://www.nsf.gov/home/cns/start.htm>) to be notified of new funding opportunities that become available.

ABOUT THE NATIONAL SCIENCE FOUNDATION

The National Science Foundation (NSF) funds research and education in most fields of science and engineering. Awardees are wholly responsible for conducting their project activities and preparing the results for publication. Thus, the Foundation does not assume responsibility for such findings or their interpretation.

NSF welcomes proposals from all qualified scientists, engineers and educators. The Foundation strongly encourages women, minorities and persons with disabilities to compete fully in its programs. In accordance with Federal statutes, regulations and NSF policies, no person on grounds of race, color, age, sex, national origin or disability shall be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving financial assistance from NSF, although some programs may have special requirements that limit eligibility.

Facilitation Awards for Scientists and Engineers with Disabilities (FASSED) provide funding for special assistance or equipment to enable persons with disabilities (investigators and other staff, including student research assistants) to work on NSF-supported projects. See the GPG Chapter II, Section D.2 for instructions regarding preparation of these types of proposals.

The National Science Foundation promotes and advances scientific progress in the United States by competitively awarding grants and cooperative agreements for research and education in the sciences, mathematics, and engineering.

To get the latest information about program deadlines, to download copies of NSF publications, and to access abstracts of awards, visit the NSF Website at <http://www.nsf.gov>

- **Location:** 4201 Wilson Blvd. Arlington, VA 22230

- **For General Information** (NSF Information Center): (703) 292-5111

- **TDD (for the hearing-impaired):** (703) 292-5090

- **To Order Publications or Forms:**

Send an e-mail to: pubs@nsf.gov

or telephone: (703) 292-7827

- **To Locate NSF Employees:** (703) 292-5111

PRIVACY ACT AND PUBLIC BURDEN STATEMENTS

The information requested on proposal forms and project reports is solicited under the authority of the National Science Foundation Act of 1950, as amended. The information on proposal forms will be used in connection with the selection of qualified proposals; project reports submitted by awardees will be used for program evaluation and reporting within the Executive Branch and to Congress. The information requested may be disclosed to qualified reviewers and staff assistants as part of the proposal review process; to applicant institutions/grantees to provide or obtain data regarding the proposal review process, award decisions, or the administration of awards; to government contractors, experts, volunteers and researchers and educators as necessary to complete assigned work; to other government agencies needing information as part of the review process or in order to coordinate programs; and to another Federal agency, court or party in a court or Federal administrative proceeding if the government is a party. Information about Principal Investigators may be added to the Reviewer file and used to select potential candidates to serve as peer reviewers or advisory committee members. See

Systems of Records, NSF-50, "Principal Investigator/Proposal File and Associated Records," 63 Federal Register 267 (January 5, 1998), and NSF-51, "Reviewer/Proposal File and Associated Records," 63 Federal Register 268 (January 5, 1998). Submission of the information is voluntary. Failure to provide full and complete information, however, may reduce the possibility of receiving an award.

An agency may not conduct or sponsor, and a person is not required to respond to an information collection unless it displays a valid OMB control number. The OMB control number for this collection is 3145-0058. Public reporting burden for this collection of information is estimated to average 120 hours per response, including the time for reviewing instructions. Send comments regarding this burden estimate and any other aspect of this collection of information, including suggestions for reducing this burden, to: Suzanne Plimpton, Reports Clearance Officer, Division of Administrative Services, National Science Foundation, Arlington, VA 22230.

OMB control number: 3145-0058.

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