

ENGINEERING MICROSYSTEMS: “XYZ ON A CHIP”

Program Solicitation

NSF 00-15

DIRECTORATE FOR ENGINEERING

***PRE-PROPOSAL DEADLINE:
FEBRUARY 14, 2000, 5:00 PM (LOCAL TIME)***

***PROPOSAL DEADLINE:
JUNE 5, 2000, 5:00 PM (LOCAL TIME)***



NATIONAL SCIENCE FOUNDATION



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SUMMARY OF PROGRAM REQUIREMENTS

GENERAL INFORMATION

Program Name:

Engineering Microsystems: “XYZ on a Chip”

Short Description/Synopsis of Program:

The goal of this initiative is to stimulate fundamental research that will enable the development of advanced engineering micro-systems involving non-electronic processes and their integration with electronics. The initiative emphasizes exploration of non-electronic processes at the micro- and nanoscales, architectural and design issues of engineering micro-systems, materials and layering problems, rapid prototyping and novel applications. The initiative has strong emphasis on non-traditional approaches and applications and encourages co-operative and interdisciplinary activities as well as the use of shared facilities. Proposals should discuss effective ways in which education and training are integrated within the research program. Each proposal should identify areas of application and potential impacts, and refer to specific criteria mentioned in this solicitation.

Cognizant Program Officer(s):

Questions concerning this joint program should be addressed, preferably via e-mail, to the following NSF program officers in the Directorate for Engineering:

Engineering Microsystems Working Group:

Division of Bioengineering and Environmental Systems (BES)

Dr. Janice Jenkins (jmjenkin@nsf.gov)

Division of Civil and Mechanical Systems (CMS)

Dr. Alison Flatau (aflatau@nsf.gov)

Division of Chemical and Transport Systems (CTS)

Dr. Geoffrey Prentice (gprentice@nsf.gov)

Division of Design, Manufacture and Industrial Innovation (DMII)

Dr. Kamlakar P. Rajurkar, (krajurka@nsf.gov)

Division of Engineering Education and Centers (EEC)

Dr. Cheryl Cathey (ccathey@nsf.gov)

Division of Electrical and Communications Systems (ECS)

Dr. Rajinder P. Khosla (rkhosla@nsf.gov)

Applicable Catalog of Federal Domestic Assistance (CFDA) No.: 47.041 — Engineering Grants

ELIGIBILITY

- ◆ Limitation on the categories of organizations that are eligible to submit proposals:

Proposals may be submitted by US academic institutions in support of individual investigators or groups.

- ◆ PI eligibility limitations: **None**

- ◆ Limitation on the number of proposals that may be submitted by an organization:

Only one proposal may be submitted by a Principal Investigator and he/she may only collaborate in one other proposal as a co-Investigator.

AWARD INFORMATION

- ◆ Type of award anticipated: **Standard or Continuing Grant**
- ◆ Number of awards anticipated in FY 00: **12-15 awards**
- ◆ Amount of funds available: **Approximately \$8 million will be available for this initiative in FY 2000**
- ◆ Anticipated date of award: **September 2000**

PROPOSAL PREPARATION & SUBMISSION INSTRUCTIONS

◆ **Proposal Preparation Instructions**

- Letter of Intent requirements: **Not MANDATORY, BUT ENCOURAGED**
- Preproposal requirements: **Yes**
- Proposal preparation instructions: **Standard NSF Grant Proposal Guide instructions**
- Supplemental proposal preparation instructions: **None**
- Deviations from standard (GPG) proposal preparation instructions: **None**

◆ **Budgetary Information**

- Cost sharing/matching requirements: **None**
- Indirect cost (F&A) limitations: **None**
- Other budgetary limitations:

Award amounts up to \$170,000/year for up to three years for proposals submitted by one or two investigators and Group awards up to \$500,000/year for up to three years in response to this announcement

◆ **FastLane Requirements**

- FastLane proposal preparation requirements: **Yes**
- FastLane point of contact: **<Ms. Gwendolyn Owens Phone 703 306 1339 <gowens@nsf.gov>**

◆ **Deadline/Target Dates**

◆ **Proposal Deadline:**

◆ **PRE-PROPOSAL DEADLINE: FEBRUARY 14, 2000, 5:00 PM (LOCAL TIME)**

◆ **FULL PROPOSAL DEADLINE: JUNE 5, 2000, 5:00 PM (LOCAL TIME)**

PROPOSAL REVIEW INFORMATION

◆ **Merit Review Criteria: Standard National Science Board approved criteria Plus Specific Criteria Mentioned in the Solicitation**

AWARD ADMINISTRATION INFORMATION

◆ **Grant Award Conditions: GC-1 or FDP III**

◆ **Special grant conditions anticipated: None anticipated**

◆ **Special reporting requirements anticipated: None**

INTRODUCTION

The Engineering Directorate of the National Science Foundation (NSF) announces a second round of competition of the research initiative on Engineering Microsystems: “XYZ on a Chip”NSF 00-15 (replacing NSF 99-31). The focus of this year’s initiative is on non-electronic applications that make effective use of the fundamental aspects of the technology of microelectronics by adding new functions, processes, or capabilities. The initiative is intended to encourage development of novel applications, exploration of non-electrical processes at micro-scale, extension of lithographic “printing” methods to non-electrical processes, architectural and design issues of “wet” chips that interface to biological or chemical processes, materials and layering problems, and rapid prototyping. The initiative has a strong emphasis on non-traditional applications. Proposals are encouraged to integrate electronics with non-electronic processes to enhance functions and capabilities, but the processing of electrical signals in itself is not a focus of this initiative. The initiative will encourage cooperative and interdisciplinary activities, as well as the use of shared facilities and access to federally supported laboratories and resources to undertake any experimental and computational phases of the proposed research.

The invention of transistors, quickly followed within a decade by integrated circuits, created the world of microelectronics and ushered in a second industrial revolution based on an intense exploitation of knowledge and information. The remarkable feat of microelectronics is not the reduction in size, in itself, but rather an elegant solution to the problem of complexity. As the size of individual components shrinks, and the number of components in a system increases, their interconnection grows geometrically more complex. Integrated circuit technologies have solved this problem by careful attention to the modularity, hierarchy, and interconnections imposed in the chip *design* discipline. The subsequent manufacturing process exploits this organization through the standardization of fabrication steps. The technology of microelectronics that has evolved is one of great power and sophistication and can now be extended to applications other than electronics. It is useful to call this the “chip technology.” The extension of this technology to include non-electronic devices, processes, and mechanisms leads to the terminology “XYZ on a chip,” where XYZ may refer to any non-electrical phenomena such as biology, genomics, chemistry, optics, mechanics (including microelectromechanical systems, or MEMS), sensors, actuators, and software.

PROGRAM DESCRIPTION

The evolution of microelectronics chip technology has created opportunities to develop new types of micro-systems based on physical, chemical, and biological principles. This initiative is designed to support fundamental research that will enable the development of advanced engineering micro-systems involving non-electrical processes and their integration with electronics. Proposals in support of the following themes are invited:

1. investigation of non-electrical *processes and relevant properties* at micro and nano scales,
2. development of *architectures, physical representations, and design methodologies* for non-electrical processes and micro-systems,
3. development of *fabrication* techniques for biological, chemical, optical, mechanical and other processes,
4. rapid *prototyping* techniques for novel chips,
5. *interfacing and integrating* of non-electrical processes with electronics and with each other.

Proposed research projects should substantially contribute to one or more of these basic research themes of engineering micro-systems and address the *integration* of these themes in the context of specific environments and applications. Although the primary emphasis will be on achieving a high degree of fundamental understanding, any investigation of potential impact on new applications will also be given a high priority. Experimental testing and evaluation of prototype systems is encouraged. It is anticipated that cooperation among researchers from different disciplines will open new avenues of research and develop new applications. Each research proposal should identify areas of application and potential impacts.

Titles and Abstracts of all projects previously funded in this program may be reviewed by searching FastLane under “Awards by Program” using the title Engineering Microsystems: “XYZ” on A Chip.”

ELIGIBILITY

Only U.S. academic institutions are eligible to submit pre-proposals and full proposals in support of individual investigators or by small groups. Synergistic collaboration among researchers and collaboration or partnerships with industry or government laboratories is encouraged when appropriate. Research may also be proposed by groups who will collaborate with ongoing or former NSF-supported engineering research centers. Group proposals should emphasize cooperation among complementary disciplines, collaboration with industry and a strong support for undergraduate and graduate students working in teams. Proposals involving more than one institution must be submitted as a single administration package from one of the academic institutions involved. Prospective applicants are encouraged to contact one of the program officers listed in this document for additional guidance on collaborations.

Full proposals submitted in response to this solicitation will only be accepted by NSF if they are invited by NSF based on review and recommendation of the pre-proposal submissions.

AWARD INFORMATION

Under this solicitation, NSF solicits proposals for funding amounts up to \$170,000 per year for up to three years with one or two investigators. For group proposals that emphasize cooperation among complementary disciplines, collaboration with industry and a strong support for undergraduate and graduate students working in teams, and will collaborate with ongoing or former NSF supported engineering research centers, awards up to \$500,000 per year for up to three years may be considered if the justification and promise are compelling. NSF expects to make grants at a variety of award sizes appropriate to the technical scope and level of effort required. NSF expects to fund approximately 12-15 research awards depending on the quality of submissions and the availability of funds.

A. Proposal Preparation Instructions.

Proposals submitted in response to this program announcement should be prepared and submitted in accordance with the general guidelines contained in the *Grant Proposal Guide* (GPG), NSF 00-2. The complete text of the GPG (including electronic forms) is available electronically on the NSF Web site at: <<http://www.nsf.gov/>>. Paper copies of the GPG may be obtained from the NSF Publications Clearinghouse, telephone 301.947.2722 or by e-mail from pubs@nsf.gov.

Proposers are reminded to identify the program announcement number (NSF 00-15) in the program announcement/solicitation block on the NSF Form 1207, "*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.

(i) Notice of Intent

Principal Investigators intending to submit a pre-proposal are encouraged to submit a notice of intent via email to xyzintent@nsf.gov by December 10, 1999. The notice of intent is not mandatory. PIs who do not submit this notice may submit pre-proposals. The notice of intent should include: title of proposal, the names and affiliations of the Principal Investigator and any co-Investigators, including those from industry or national laboratories, and a brief three to five sentence description of the proposed work.

(ii) Pre-Proposal Submission Instructions

A pre-proposal is required for response to this Solicitation. Each pre-proposal should consist of the two page NSF cover sheet, a project description of not more than three (3) pages (single space, minimum 10 point type) that includes a description of the goals, background, approach, and expected outcomes of the proposed research and a list of expected collaborators. It should also include a statement about how the work enhances, strengthens, or adds a new dimension to the state-of-the-art or the investigator's/group's current work. In addition to these three pages, a

biographical sketch of the Principal Investigator should be included. A list of co-PIs should be included on the cover sheet for proposal (NSF Form 1207) but their biographical sketches should not be included. However the roles of the co-PIs may be described in the text of the pre-proposal.

Pre-proposals must be submitted electronically via FastLane. Detailed Instructions for preparing and Submitting Proposals via FastLane are given in the section on FastLane requirements given below. You may also contact Ms Gwendolyn Owens at gowens@nsf.gov (tel. 703-306-1339).

Pre-proposals must reference this program solicitation (NSF 00-15) on the cover page. For EPSCoR-certified pre-proposals, write EPSCoR only on the top right corner of the signed original. Page limitation guidelines must be strictly adhered to. No appendices to a pre-proposal are permitted, and pre-proposals submitted with appendices will not be reviewed.

(iii) Final Proposal Preparation Instructions

Only invited proposals, selected on the basis of review of pre-proposals, will be considered by NSF for this competition. Page limitation guidelines will be strictly adhered to. No appendices to the proposal are permitted, and proposals submitted with appendices will be returned without review.

Invited proposals must be fully prepared for electronic submission using the NSF FastLane system. Detailed Instructions for preparing and Submitting Proposals via FastLane are given below in the section FastLane Requirements. You may also contact Ms Gwendolyn Owens at gowens@nsf.gov (tel. 703-306-1339).

The proposal must also identify the pre-proposal number assigned by NSF in the appropriate box on the Cover Sheet of the proposal. For EPSCoR-certified proposals, write EPSCoR only on the top right corner of the signed original.

B. Budgetary Information

Cost Sharing Requirements.

None

C. **Proposal Due Dates.**

Notice of Intent to submit a pre-proposal is to be submitted by email to: xyzintent@nsf.gov by December 10, 1999.

Pre-proposals are required to be submitted electronically via FastLane, and submission of pre-proposals must be completed no later than 5:00 PM (local time) on February 14, 2000. The signed cover sheet (NSF Form 1207) for the pre-proposal should be forwarded to the following address and must be postmarked by Feb 18, 2000.

National Science Foundation
DIS-FastLane Cover Sheet
4201 Wilson Boulevard
Arlington, VA 22230

A pre-proposal may not be processed until the complete proposal (including signed cover sheet) has been received by NSF.

FastLane electronic submission of invited full proposals must be completed no later than 5:00 PM (local time) on June 5, 2000. It is required that Proposals be submitted electronically via FastLane. The signed cover sheet (NSF Form 1207) for a full proposal, and paper copies of any supplemental documentation, such as Letters of Support from collaborating industry, should be forwarded to the following address and must be postmarked by June 9, 2000.

National Science Foundation
DIS-FastLane Cover Sheet
4201 Wilson Boulevard
Arlington, VA 22230

A proposal may not be processed until the complete proposal (including signed cover sheet) has been received by NSF.

D. FastLane Requirements.

Pre-proposals and Full proposals are required to be submitted by FastLane. Detailed instructions for proposal preparation and submission via FastLane are available at <https://www.fastlane.nsf.gov/a1/newstan.htm>.

Submission of Signed Cover Sheets. For proposals submitted electronically, the signed paper copy of the proposal Cover Sheet (NSF Form 1207) should be forwarded to NSF within five working days following proposal submission in accordance with FastLane proposal preparation and submission instructions referenced above.

Paper Submission of Proposals. For paper submission of proposals, proposers should follow submission instructions contained in the NSF Grant Proposal Guide (GPG), (NSF 00-2) Section I.F.

PROPOSAL REVIEW INFORMATION

A. Merit Review Criteria.

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.

Proposals will be reviewed against the following general merit review criteria established by the National Science Board. Following each criterion are potential considerations that the reviewer may employ in the evaluation. These are suggestions and not all will apply to any given proposal. Each reviewer will be asked to address only those that are relevant to the proposal 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 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?

PIs should address the following elements in their proposal to provide reviewers with the information necessary to respond fully to both NSF merit review criteria. NSF staff will give these factors careful consideration 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 learner 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 -- are 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.

Review of Pre-Proposals

Evaluation of pre-proposals will be guided by the NSF merit review criteria as described above. Pre-proposal review will be coordinated by a working group of NSF program officers. The selection process will involve a panel review to determine intrinsic merit and broad impact related to the specific technical scope of the Engineering Microsystems program goals. Pre-proposals with limited scientific breadth, with single discipline emphasis or impact, or without focus on novel non-electronic implementations and applications will not be reviewed. PIs of selected pre-proposals will be contacted by March 13, 2000, and invited to submit a full proposal in response to this Program Solicitation.

Review of Full Proposals

Invited full proposals will be evaluated in accordance with the NSF merit review criteria as described above and the additional criteria listed below. Proposal review will be coordinated by a working group of NSF program officers. The selection process will involve a panel review to determine intrinsic merit and broad impact. Additional ad-hoc mail reviews may be used as well.

Additional criteria in the evaluation process specific to Engineering Microsystems: "XYZ on a Chip" will focus on: a) the contribution of the research on novel, non-electronic processes and functions which are integrated into microsystems chip design and fabrication, b) the contribution to the fundamental science and engineering principles underlying architectures, physical representations, prototyping methodologies and the interfacing /integration of non-electrical processes and electronics, c) a detailed plan for cooperation and implementation which takes advantage of complementary technical strengths, facilities, national laboratories, centers, and/or industry partners.

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 will be reviewed by panels selected by the Engineering Microsystems Working Group.

Reviewers will be asked to formulate a recommendation to either support or decline each proposal. A program officer assigned to manage the proposal's review will consider the advice of reviewers and will formulate a recommendation. NSF will be able to tell applicants whether their proposals have been declined or recommended for funding within six months for 95 percent of proposals. The time interval begins on the proposal deadline or target date or from the date of receipt, if deadlines or target dates are not used by the program. 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 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 an 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 Officer does so at its own risk.

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 (DGA). 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.

B. Grant Award Conditions.

An NSF grant consists of: (1) the award letter, which includes any special provisions applicable to the grant 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 grant conditions, such as Grant General Conditions (NSF GC-1)* or Federal Demonstration Partnership Phase III (FDP) Terms and Conditions* and (5) any NSF brochure, program guide, announcement or other NSF issuance that may be incorporated by reference in the award letter. Electronic mail notification is the preferred way to transmit NSF grants 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 Web site at: <<http://www.nsf.gov/>>. Paper copies may be obtained from the NSF Publications Clearinghouse, telephone 301.947.2722 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, (NSF 95-26) available electronically on the NSF Web site. The GPM also is available in paper copy by subscription from the Superintendent of Documents, Government Printing Office, Washington, DC 20402. The GPM may be ordered through the GPO Web site at: <<http://www.gpo.gov/>>. The telephone number at GPO for subscription information is 202.512.1800.

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.

Within 90 days after expiration of a grant, the PI also is required to submit a final project report. Approximately 30 days before expiration, NSF will send a notice to remind the PI of the requirement to file the final project report. Failure to provide final technical reports delays NSF review and processing of pending proposals for that PI. PIs should examine the formats of the required reports in advance to assure availability of required data.

NSF has implemented a new electronic project reporting system, available through FastLane, which 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. Reports will continue to be required annually and after the expiration of the grant, but PIs will not need to re-enter information previously provided, either with the proposal or in earlier updates using the electronic system.

Effective October 1, 1999, PIs are required to use the new reporting system for submission of annual and final project reports.

D. New Awardee Information.

If the submitting organization has never received an NSF award, it is recommended that the organization's appropriate administrative officials become familiar with the policies and procedures in the NSF *Grant Policy Manual* which are applicable to most NSF awards. The "Prospective New Awardee Guide" (NSF 99-78) includes information on: Administrative and Management Information; Accounting System Requirements and Auditing Information; and Payments to Organizations with NSF Awards. This information will assist an organization in preparing documents that NSF requires to conduct administrative and financial reviews of an organization. The guide also serves as a means of highlighting the accountability requirements associated with Federal awards. This document is available electronically on NSF's Web site at: <<http://www.nsf.gov/cgi-bin/getpub?nsf9978>>.

CONTACTS FOR ADDITIONAL INFORMATION

General inquiries should be made to the **Engineering Microsystems: "XYZ on a Chip"** Dr. Rajinder P. Khosla, Electrical and Communications Systems Division, National Science Foundation, Arlington, VA 22230, telephone 703. 306.1339, e-mail: rkhosla@nsf.gov. For questions related to use of FastLane, contact <Ms. Gwendlyn Owens, telephone 703 306 1339, e-mail gowens@nsf.gov.

OTHER PROGRAMS OF INTEREST

The NSF Guide to Programs is a compilation of funding for research and education in science, mathematics, and engineering. General descriptions of NSF programs, research areas, and eligibility information for proposal submission are provided in each chapter. Many NSF programs offer announcements concerning specific proposal requirements. To obtain additional information about these requirements, contact the appropriate NSF program offices listed in Appendix A of the GPG. Any changes in NSF's fiscal year programs occurring after press time for the Guide to Programs will be announced in the NSF Bulletin, available monthly (except July and August), and in individual program announcements. The Bulletin is available electronically via the NSF Web Site at <http://www.nsf.gov>. The direct URL for recent issues of the Bulletin is <http://www.nsf.gov/od/lpa/news/publicat/bulletin/bulletin.htm>. Subscribers can also sign up for NSF's Custom News Service to find out what funding opportunities are available.

ABOUT THE NATIONAL SCIENCE FOUNDATION

The National Science Foundation (NSF) funds research and education in most fields of science and engineering. Grantees 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 (unless otherwise specified in the eligibility requirements for a particular program).

Facilitation Awards for Scientists and Engineers with Disabilities (FASED) 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 program announcement or contact the program coordinator at (703) 306-1636.

The National Science Foundation has Telephonic Device for the Deaf (TDD) and Federal Information Relay Service (FIRS) capabilities that enable individuals with hearing impairments to communicate with the Foundation regarding NSF programs, employment, or general information. TDD may be accessed at (703) 306-0090 or through FIRS on 1-800-877-8339.

We want all of our communications to be clear and understandable. If you have suggestions on how we can improve this document or other NSF publications, please email us at plainlanguage@nsf.gov.

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 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.

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: Reports Clearance Officer; Information Dissemination Branch, DAS; National Science Foundation; Arlington, VA 22230.

YEAR 2000 REMINDER

In accordance with Important Notice No. 120 dated June 27, 1997, Subject: Year 2000 Computer Problem, NSF awardees are reminded of their responsibility to take appropriate actions to ensure that the NSF activity being

supported is not adversely affected by the Year 2000 problem. Potentially affected items include: computer systems, databases, and equipment. The National Science Foundation should be notified if an awardee concludes that the Year 2000 will have a significant impact on its ability to carry out an NSF funded activity. Information concerning Year 2000 activities can be found on the NSF web site at <http://www.nsf.gov/oirm/y2k/start.htm>.

Catalogue of Federal Domestic Assistance (CFDA) No.: 47.041 – Engineering Grants

OMB No.: 3145-0058

NSF 00-15 (Replaces NSF 99-31)

Electronic Dissemination Only