

# Instrumentation for Materials Research - Major Instrumentation Projects (IMR-MIP)

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## Program Solicitation

NSF 03-604



### National Science Foundation

Directorate for Mathematical and Physical Sciences  
Division of Materials Research

## Full Proposal Deadline(s) (due by 5 p.m. proposer's local time):

December 15, 2003

Thereafter, the third Monday in October

## SUMMARY OF PROGRAM REQUIREMENTS

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### General Information

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#### Program Title:

Instrumentation for Materials Research - Major Instrumentation Projects (IMR-MIP)

#### Synopsis of Program:

This Program Solicitation establishes within the Instrumentation for Materials Research (IMR) Program in the Division of Materials Research (DMR) a new opportunity for support for the design and construction of major instruments, sited at major U.S. facilities, which cost more than \$2 million per instrument. The program is also intended to support the development of detailed conceptual and engineering design for new tools for materials preparation or characterization at major national facilities. Such instruments may include, for example, neutron beam lines, synchrotron beam lines, and high field magnets as well as development of detectors and preparation environments necessary to support materials research. The program will support two types of awards: Conceptual and Engineering Design (CED) awards and Construction (CNST) awards. A CED award will enable the proposer to do the necessary engineering design of the instrument. A CNST proposal may only be submitted after a satisfactory engineering design of the instrument has been completed and has been approved by both the facility at which the instrument will be situated and by NSF. The program will not provide operating funds for any of the projects it supports through this solicitation. Operational costs must be supported either by the facility at which the instrument is located or through some other source. DMR expects to have \$3.5 million available to support this activity in FY 2004, and to increase this level of support in future years, depending upon the availability of funds.

#### Cognizant Program Officer(s):

- Hugh M. Van Horn, Senior Scientist/Program Director (NAF), Directorate for Mathematical & Physical Sciences, Division of Materials Research, 1065 N, telephone: (703) 292-4920, email: [hvanhorn@nsf.gov](mailto:hvanhorn@nsf.gov)

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

- 47.049 --- Mathematical and Physical Sciences

## Eligibility Information

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- **Organization Limit:**

IMR-MIP Proposals may be submitted by colleges or universities in the United States with strong research and education programs. NSF does not normally support research or educational activities by scientists employed by other Federal agencies or Federally Funded Research and Development Centers (FFRDCs). However, a scientist, engineer, or educator who holds a joint appointment with a university as well as with an FFRDC may submit proposals through the university. Such an individual may receive support if he/she is a faculty member of the university even if part of his/her salary is provided by the Federal agency. Under unusual circumstances, a Federal research laboratory or FFRDC may submit a proposal directly to NSF; for example, if such an institution provides unique capabilities which can be made available to members of the university community through an NSF award. NSF support will not be made available to support activities which are the normal responsibility of the Federal laboratory or FFRDC. Interested Principal Investigators (PIs) at a Federal laboratory or an FFRDC should contact the cognizant program officer named in this Solicitation before preparing a proposal in response to this Solicitation.

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

## Award Information

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- **Anticipated Type of Award:** Other - Continuing Grant or Cooperative Agreement
- **Estimated Number of Awards:** 3 to 4 - (2 or 3 CED awards and 1 CNST award per year)
- **Anticipated Funding Amount:** \$3,500,000

## Proposal Preparation and Submission Instructions

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### A. Proposal Preparation Instructions

- **Full Proposal Preparation Instructions:** This solicitation contains information that deviates from the standard Grant Proposal Guide (GPG) proposal preparation guidelines. Please see the full text of this solicitation for further information.

### B. Budgetary Information

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

### C. Due Dates

- **Full Proposal Deadline Date(s)** (due by 5 p.m. proposer's local time):  
December 15, 2003  
Thereafter, the third Monday in October

## Proposal Review Information

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- **Merit Review Criteria:** National Science Board approved criteria. Additional merit review considerations apply. Please see the full text of this solicitation for further information.

## Award Administration Information

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

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## I. INTRODUCTION

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Sophisticated tools and facilities for materials preparation and characterization are essential for researchers studying materials in a wide range of scientific disciplines, including physics, chemistry, biology, materials science, the geosciences, and engineering. They include, for example, facilities for neutron scattering, synchrotron radiation, and high magnetic fields.

Through the program described in this Solicitation, NSF intends to support the design and construction of a variety of mid-scale instruments<sup>(1)</sup>, including *but not limited to* beamlines, high-field magnets, detectors, and preparation environments where appropriate. Some of these instruments may be developed in partnership with other federal agencies. NSF has a key role to play in supporting the education and training of the future researchers who will develop instrumentation for these facilities and use them effectively for the advancement of science. Therefore priority will be given to those proposals which involve students in the design and construction of the instruments.

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(1)For the purposes of this Solicitation, "mid-scale instruments" - also called "major instrumentation projects" - are those with construction costs greater than about \$2 million but less than about \$20 million. Support for smaller projects is available through NSF's Major Research Instrumentation (MRI) Program.

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This Program will:

- Help address the urgent need to increase the number and quality of mid-scale instruments available to the entire US research community in materials and related areas of science and engineering.
- Enable the training of the next generation of instrument scientists and engineers.
- Enable existing instruments to be upgraded as new technology becomes available.
- Optimize the choice of instruments built by picking the most mature projects for construction.

## II. PROGRAM DESCRIPTION

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The Instrumentation for Materials Research - Major Instrumentation Projects (IMR-MIP) Program is to be used for design and construction only; operation of the instruments built with these funds is to be provided from other sources (*i.e.*, other programs within NSF or non-NSF funds). Staffing and operating the instrument will remain the responsibility of the proposing institution.

Beginning in FY 2004 and in future years, the IMR-MIP program will consider two different types of proposals:

1. Conceptual and Engineering Design (CED) proposals may request support to develop concepts for mid-scale projects to a level of maturity sufficient to determine whether such a project is ready for construction. Projects for which detailed engineering designs are needed are those with subsequent construction costs greater than about \$5 million. A successful CED proposal does not guarantee that the subsequent construction of the instrument will be funded.
2. Construction (CNST) proposals may request support for the construction of the instruments. In order to be considered for possible funding, CNST proposals *must* include a detailed engineering design, with a Work Breakdown Structure (WBS) to level 4 [see section V.A.(C).b. below for definitions], together with a detailed cost estimate. This level of detail can be provided by a previous CED award or by a similar study funded through other sources (*e.g.*, institutional support, private funding). The WBS must meet the approval of both the facility at which the instrument will be located and NSF's National Facilities (NAF) Program Director. The IMR-MIP Program expects to make one 5-year award from each annual competition in the amount of perhaps \$3 million to \$4 million per year.

The CNST awards will be funded as Cooperative Agreements.

The IMR-MIP Program will accept proposals from university researchers for the design and construction of mid-scale tools for materials research – including equipment for materials characterization or preparation, such as detectors, beam lines, new high-field magnets, or preparation environments – at user facilities supported by NSF or other sources, including the Department of Energy (DOE) and the National Institute of Standards and Technology (NIST). For example, these could include proposals for beam-line instrumentation at the Spallation Neutron Source (SNS).

The scientific team that constructs such an instrument will be limited to 25% of the total time available on that instrument, while at least 75% will be available for the facility to allocate to other users through its normal peer review process. To make sure that the facility is willing to entertain such a project, the Principal Investigators (PIs) for a CED or CNST proposal must attach to the proposal a letter from the facility director stipulating that if the PIs are successful in obtaining subsequent construction funding, the facility will allow construction and will staff and operate the equipment at the completion of construction through the operations phase.

It is not necessary that a PI have received a CED award prior to submitting a CNST proposal, so long as the documents necessary for a detailed review have been provided which meet both the facility and NSF approval. Not all CED awards are expected to result in successful CNST proposals.

### **III. ELIGIBILITY INFORMATION**

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IMR-MIP Proposals may be submitted by colleges or universities in the United States with strong research and education programs. NSF does not normally support research or educational activities by scientists employed by other Federal agencies or Federally Funded Research and Development Centers (FFRDCs). However, a scientist, engineer, or educator who holds a joint appointment with a university as well as with an FFRDC may submit proposals through the university. Such an individual may receive support if he/she is a faculty member of the university even if part of his/her salary is provided by the Federal agency. Under unusual circumstances, a Federal research laboratory or FFRDC may submit a proposal directly to NSF; for example, if such an institution provides unique capabilities which can be made available to members of the university community through an NSF award. NSF support will not be made available to support activities which are the normal responsibility of the Federal laboratory or FFRDC. Interested Principal Investigators (PIs) at a Federal laboratory or an FFRDC should contact the cognizant program officer named in this Solicitation before preparing a proposal in response to this Solicitation.

An institution may submit at most one IMR-MIP proposal in a given year, whether for Conceptual and Engineering Design (CED) or for Construction (CNST).

### **IV. AWARD INFORMATION**

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The IMR-MIP Program anticipates making 2 or 3 CED awards per year, funded through continuing grants for up to three years, each for a total of up to about \$2 million; and/or making one CNST award, funded through a five-year cooperative agreement, for about \$3 million to \$4 million per year.

### **V. PROPOSAL PREPARATION AND SUBMISSION INSTRUCTIONS**

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#### **A. Proposal Preparation Instructions**

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## 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](mailto:pubs@nsf.gov).

The following special instructions deviate from the GPG guidelines. Proposals must contain the items listed below and adhere to the specified page limitations. *No additional information may be provided by links to web pages.* Proposals not meeting the GPG guidelines and the following instructions will be returned without review.

**Cover Sheet:** Select the program solicitation number from the pull down list. A single NSF Unit of Consideration will then automatically be entered. FastLane allows one Principal Investigator (PI) and at most four Co-PIs to be designated. Additional lead personnel should be designated as non co-PI Senior Personnel. **The title should start with "IMR-MIP:".**

**Project Summary** (2-page limit): Provide a summary description of the proposed project including discussion of its objectives and key features in a manner that will be informative to a general technical audience. The project summary must separately address both NSF review criteria of intellectual merit and broader impacts of the proposed activity.

**Project Description:** The project description section contains the following items a through e, and is limited to a combined total length of 25 pages for CED proposals and 50 pages for CNST proposals, inclusive of tables, figures, or other graphical data.

**a. Introduction:** Describe briefly where the project "fits" on a national and international level. Limit: 1 page. This one-page item is included within the page limitation for the Project Description.

**b. Vision and Goals:** Describe the vision and goals for the proposed project, including its potential in enabling the nation's research and education infrastructure for materials science and engineering and its broader educational and societal impacts.

**c. Capabilities of the Project:** Conceptual and Engineering Design (CED) proposals may request support to develop concepts for mid-scale projects to a level of maturity sufficient to determine whether such a project is ready for construction. Projects for which detailed engineering designs are needed are those with subsequent construction costs greater than \$5 million. The proposal should provide a brief but compelling scientific justification for the project; summarize the qualifications of the Principal Investigator and his or her collaborators, indicating their ability to complete a design with the necessary detail; and summarize the approach to be taken in completing the design. CED proposals for mid-scale instruments are expected to require funding up to about \$2 million in total. To make sure that the facility where the instrument would be located is willing to entertain such a project, the Principal Investigators for a CED proposal must attach a letter from the facility director stating that if they are successful in obtaining subsequent construction funding, the facility will staff and operate the project at the completion of construction through the operation phase.

Construction (CNST) proposals may request support for the construction of mid-scale projects. The proposal should begin with a compelling scientific case, justifying the need for the project; summarize the qualifications of the Principal Investigators for overseeing such a construction project; include a detailed engineering design, with a Work Breakdown Structure (WBS) to level 4 (*cf.*, reference 2); provide detailed staffing estimates; indicate the scheduling of major aspects of the work; and provide a detailed estimate of the costs of the project. NSF does not allow a separate budgeting for contingencies, so it is important to ensure that the estimates for necessary materials, staffing, and other major cost drivers are made carefully enough so that the total cost of the project is sufficient to accommodate unanticipated problems. This level of detail can be provided by a previous CED award or by a similar study funded through other sources (*e.g.*, institutional support, private funding). The CNST awards will be funded as Cooperative Agreements. To make sure that the facility is willing to entertain such a project, the Principal Investigators for a CNST proposal must attach a letter from the facility director stating that if they are successful in obtaining construction funding, the facility will staff and operate the equipment – detector, instrument, beam line, *etc.* – at the completion of construction through the operations phase.

(2) *The Project Manager's Desk Reference*, James P. Lewis (McGraw-Hill, 1995), pp. 78 ff.

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**d. Education, Outreach, and Knowledge Transfer:** Describe how the project will involve graduate and undergraduate students, postdoctoral associates, and others. Describe how the project will involve underrepresented groups in science and engineering. Describe outreach plans intended to increase the external user base, to reach scientific and engineering communities not traditionally involved in the types of research enabled by the project. Describe provisions for knowledge transfer to the broader research and technology communities.

**e. Management Structure:** Describe the management structure for the project. For large CNST projects this should include a discussion of how costs will be controlled, how the project will maintain the work schedule, how technical risks will be assessed and minimized, and the frequency of the institution's periodic project reviews.

**Biographical Sketches** (2-page limit each for PI and co-PIs; 1-page limit each for other participants): Provide a biographical sketch for each participant expected to have an important role in the project, including their titles and affiliations. The sketch should describe the individual's academic and professional history and may list five significant publications and other activities or accomplishments. In choosing what to include, emphasize information that will be helpful in understanding the strengths, qualifications, and specific impact the individual brings to the project.

**Budget:** Provide annual budgets for each year of the project. The FastLane system will automatically fill out the cumulative multi-year budget.

**Budget Justification** (3-page limit): Justify the funds requested in the major budget categories for the project. Describe the proposed allocation of funds with sufficient clarity to show how resources will be utilized in carrying out the project.

**Facilities, Equipment, and Other Resources** (3-page limit): This section of the proposal will be used to assess the adequacy of the organizational resources available to perform the effort proposed. Provide details of existing or proposed resource commitments (see below) from other organizations, such as the government, industry, private foundations, and non-U.S. institutions. Describe only those resources that are directly applicable to the project. Commitments for CNST proposals that constitute cost-sharing are limited to 10% (no more, no less) of the NSF funding support for the mid-scale instrument. That amount should be listed on line M of the proposal, and it is auditable. Documentation of this cost sharing should be entered in the Supplementary Documents section. Cost sharing is not required for CED proposals. Any other commitments detailed in this section of the proposal will not be auditable.

**Supplementary Documentation:** Submit official supporting letters that verify resource commitments by each institution participating in the project. Specifically, include a letter from the director of the facility at which the project is to be sited indicating that, if construction funding is approved, the facility will provide the requisite level of operations support. List and identify collaborations with industry, national laboratories, and other universities, including international collaborations. Letters that verify resource commitments for the auditable cost sharing described in the "Facilities, Equipment, and Other Resources" section (above) should be clearly labeled as cost sharing commitments.

Proposers are reminded to identify the program announcement/solicitation number (03-604) in the program announcement/solicitation block on the proposal Cover Sheet. Compliance with this requirement is critical to determining the relevant proposal processing guidelines. Failure to submit this information may delay processing.

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## **B. Budgetary Information**

### **Cost Sharing:**

Cost sharing is not required for CED proposals. For CNST proposals, academic institutions must provide cost sharing of at least 10% of the NSF funding support for construction of the mid-scale instrument. This amount must be shown on line M of the proposed budget and is auditable.

The proposed cost sharing must be shown on Line M on the proposal budget. Documentation of the availability of cost sharing must be included in the proposal. Only items which would be allowable under the applicable cost principles, if charged to the project, may be included as the awardee's contribution to cost sharing. Contributions may be made from any non-Federal source, including non-Federal grants or contracts, and may be cash or in-kind (see OMB Circular A-110, Section 23). It should be noted that contributions counted as cost-sharing toward projects of another Federal agency may not be counted towards meeting the specific cost-sharing requirements of the NSF award. All cost-sharing amounts are subject to audit. Failure to provide the level of cost-sharing reflected in the approved award budget may result in termination of the NSF award, disallowance of award costs and/or refund of award funds to NSF.

### C. Due Dates

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

**Full Proposal Deadline(s)** (due by 5 p.m. proposer's local time):

December 15, 2003

Thereafter, the third Monday in October

### D. FastLane Requirements

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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: <http://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](mailto: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

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### A. NSF Proposal Review Process

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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.

## Additional Review Criteria:

There are four "Critical Decisions" (CDs) for projects seeking funding through the IMR-MIP program: CD-1, the need for the project; CD-2, approval of the project baseline; CD-3, authorization to begin construction; and CD-4, readiness to begin operations. For a CED proposal, the decision to recommend an award is equivalent to CD-1, acceptance of the justification for the proposed project. This decision will be based upon *ad hoc* mail review of CED proposals and, if deemed necessary, culminating in a "reverse site visit."

With the support of a CED award, the Principal Investigator (PI) embarks upon the development of a detailed engineering design and a project baseline, including a Work Breakdown Structure (WBS) complete to Level 4 (as defined in standard project-management references, e.g., reference 2). These documents form the basis for a CNST proposal. It is not necessary that a PI have received a CED award prior to submitting a CNST proposal, so long as the documents necessary for a detailed review have been provided which meet both the facility and NSF approval.

The review of CNST proposals will involve *ad hoc* mail review which, if necessary, will be followed by a "reverse site visit" for meritorious proposals. For each of the major elements of the WBS, reviews will include a detailed evaluation of the costs, schedule, personnel estimates, technical risks, and project management. The WBS must be sufficiently detailed to provide confidence that the project can be completed on time and within the estimated budget. The purpose of this review is to assure NSF that the project is feasible and well managed, that there is a mechanism for addressing any technical risks involved, and that the costs are well controlled. A recommendation to fund a CNST award essentially constitutes CD-2 and CD-3 for the project. Not all CED awards are expected to result in successful CNST proposals.

Reviewers will thus be asked to address the following additional criteria:

For CED proposals,

- Is the scientific justification for the proposed project sufficiently strong to justify the preparation of a detailed engineering design?
- Do the Principal Investigator and his or her collaborators have the capabilities to complete a design with the necessary detail?
- Is the approach to be taken in completing the design appropriate, and is it likely to produce an engineering design containing sufficient detail to form the basis for a decision on construction?
- Is an adequate management structure described to oversee the construction of a mid-scale instrument should the CED proposal be funded?
- Has the facility director indicated that, if construction funding is approved, the facility will staff and operate the project at the completion of construction through the operation phase?

For CNST proposals,

- Is the scientific justification for the proposed project sufficiently strong to justify construction?
- Do the Principal Investigator and his or her collaborators have the capabilities to oversee construction?
- Is the engineering design sufficiently detailed, with a Work Breakdown Structure (WBS) to level 4?

- Instrumentation for Materials Research - Major Instrumentation Projects (IMR-MIP) Are the staffing, scheduling, and construction can be completed on schedule and within the estimated budget? In particular, have these estimates been made with sufficient care so that the total cost of the project is expected to be sufficient to accommodate unanticipated problems?
- Is a management structure in place to oversee the instrument construction from start to finish? Have contingency plans been established to overcome unexpected technical risks? Is the time to completion reasonable? Has adequate attention been given to possible delays from suppliers?

NSF will endeavor to inform applicants promptly whether or not they have been selected to participate in a “reverse site visit.” This notification is intended to allow at least one month to prepare for the review. Applicants submitting proposals should receive notice of the outcome of the review within six months following proposal submission. For those proposals subjected to a “reverse site reviews,” a summary narrative of the evaluation and recommendations resulting from the initial *ad hoc* mail review will be provided to the PI and to the panel conducting the reverse site review.

After programmatic approval has been obtained, 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 grants (for CED awards) or Cooperative Agreements (for CNST awards).

## **B. Review Protocol and Associated Customer Service Standard**

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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.

In most cases, proposers will be contacted by the Program Officer after his or her recommendation to award or decline funding has been approved by the Division Director. This informal notification is not a guarantee of an eventual award.

NSF is striving to be able to tell applicants whether their proposals have been declined or recommended for funding within six months. The time interval begins on the date of receipt. 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**

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## A. Notification of the Award

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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

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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](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](mailto: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>.

## C. Reporting Requirements

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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.

In addition to the mandatory annual project reports, post-award oversight will consist of annual project reviews. For the CED awards, these will be reverse site visits at which the PIs for all currently active CED awards present detailed progress reports at NSF. For the CNST awards, the annual project reviews will involve a site visit to the project location with an external review committee which will evaluate costs, schedule, project management and assess technical risks for each of the major elements of the work breakdown schedule. The purpose of the CNST review is to provide NSF with continuing assurance that the project is well managed, that technical risks are being addressed effectively, that costs are well controlled, and the project is on schedule. NSF may terminate CNST projects that experience unacceptable cost overruns or delays.

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

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General inquiries regarding this program should be made to:

- Hugh M. Van Horn, Senior Scientist/Program Director (NAF), Directorate for Mathematical & Physical Sciences, Division of Materials Research, 1065 N, telephone: (703) 292-4920, email: [hvanhorn@nsf.gov](mailto:hvanhorn@nsf.gov)

For questions related to the use of FastLane, contact:

- Maxine E. Jefferson-Brown, Computer Specialist, Directorate for Mathematical & Physical Sciences, Division of Materials Research, 1065 N, telephone: (703) 292-4918, fax: (703) 292-9035, email: [mjeffers@nsf.gov](mailto:mjeffers@nsf.gov)

## IX. OTHER PROGRAMS OF INTEREST

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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.

Within the Division of Materials Research (DMR), other programs that may be of particular interest to PIs considering proposal submission in response to this Solicitation include the National Facilities (NAF) program and Instrumentation for Materials Research (IMR) Program. Additional information about these programs can be obtained through the DMR Web page: <http://www.nsf.gov/mps/divisions/dmr/start.htm>. A particular NSF-wide program of potential interest is the Major Research Instrumentation (MRI) program. Additional information about all of these programs can be obtained through NSF's *Guide to Programs*.

## ABOUT THE NATIONAL SCIENCE FOUNDATION

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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.

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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>

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## **PRIVACY ACT AND PUBLIC BURDEN STATEMENTS**

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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.

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