

Major Research Instrumentation Program: Instrument Acquisition or Development

PROGRAM SOLICITATION

NSF 11-503

REPLACES DOCUMENT(S):
NSF 10-529



National Science Foundation

Office of Integrative Activities

Directorate for Biological Sciences

Directorate for Computer & Information Science & Engineering

Directorate for Education & Human Resources

Directorate for Engineering

Directorate for Geosciences

Directorate for Mathematical & Physical Sciences

Directorate for Social, Behavioral & Economic Sciences

Office of Polar Programs

Office of Cyberinfrastructure

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

January 27, 2011

4th Thursday in January thereafter

IMPORTANT INFORMATION AND REVISION NOTES

A revised version of the *NSF Proposal & Award Policies & Procedures Guide* (PAPPG), [NSF 11-1](#), was issued on October 1, 2010 and is effective for proposals submitted, or due, on or after January 18, 2011. Please be advised that the guidelines contained in [NSF 11-1](#) apply to proposals submitted in response to this funding opportunity. Proposers who opt to submit prior to January 18, 2011, must also follow the guidelines contained in [NSF 11-1](#).

Cost Sharing: The PAPPG has been revised to implement the National Science Board's recommendations regarding cost sharing. Inclusion of voluntary committed cost sharing is prohibited. In order to assess the scope of the project, all organizational resources necessary for the project must be described in the Facilities, Equipment and Other Resources section of the proposal. The description should be narrative in nature and must not include any quantifiable financial information. Mandatory cost sharing will only be required when explicitly authorized by the NSF Director. See the PAPP Guide Part I: *Grant Proposal Guide (GPG)* Chapter II.C.2.g(xi) for further information about the implementation of these recommendations.

Data Management Plan: The PAPPG contains a clarification of NSF's long standing data policy. All proposals must describe plans for data management and sharing of the products of research, or assert the absence of the need for such plans. FastLane will not permit submission of a proposal that is missing a Data Management Plan. The Data Management Plan will be reviewed as part of the intellectual merit or broader impacts of the proposal, or both, as appropriate. Links to data management requirements and plans relevant to specific Directorates, Offices, Divisions, Programs, or other NSF units are available on the NSF website at: <http://www.nsf.gov/bfa/dias/policy/dmp.jsp>. See Chapter II.C.2.j of the GPG for further information about the implementation of this requirement.

Postdoctoral Researcher Mentoring Plan: As a reminder, each proposal that requests funding to support postdoctoral researchers must include, as a supplementary document, a description of the mentoring activities that will be provided for such individuals. Please be advised that if required, FastLane will not permit submission of a proposal that is missing a Postdoctoral Researcher Mentoring Plan. See Chapter II.C.2.j of the GPG for further information about the implementation of this requirement.

REVISION SUMMARY:

- A 2-page maximum Data Management Plan, or an assertion of the absence of the need for such a Plan, is required to be provided as a supplemental document (see Section V.A.9.c). The Data Management Plan will be subject to merit-based review and FastLane will not permit submission of a proposal that is missing a Data Management Plan.
- MRI eligible expenses now include incremental costs associated with the implementation of the Data Management Plan.
- Cost sharing, when required, must be precisely 30% of the total project cost. Inclusion of voluntary committed cost sharing is prohibited.
- Guidance has been provided for proposals that request the acquisition or development of an instrument to be located at an organization other than, or away from, the submitting organization (see Sections V.A.1, V.A.3.d and V.A.9.i).
- Categorization in Section V.A.3.a. of the requested instrument is required using codes provided in the solicitation and also available at <http://www.nsf.gov/od/oia/programs/mri>.
- Information requested in the organization's commitment letter has been extended to include a list of the MRI awards made to the organization during the previous five years and a brief summary of the status of the instrumentation obtained from each award.
- Effective for awards made on or after January 4, 2010 a new reporting requirement has been instituted which requires PIs

SUMMARY OF PROGRAM REQUIREMENTS

General Information

Program Title:

Major Research Instrumentation Program (MRI)

Synopsis of Program:

The Major Research Instrumentation Program (MRI) serves to increase access to shared scientific and engineering instruments for research and research training in our Nation's institutions of higher education, museums, science centers, and not-for-profit organizations. This program especially seeks to improve the quality and expand the scope of research and research training in science and engineering, by providing shared instrumentation that fosters the integration of research and education in research-intensive learning environments. Development and acquisition of research instrumentation for shared inter- and/or intra-organizational use are encouraged, as are development efforts that leverage the strengths of private sector partners to build instrument development capacity at academic institutions.

To accomplish these goals, the MRI program assists with the acquisition or development of shared research instrumentation that is, in general, too costly and/or not appropriate for support through other NSF programs. Instruments are expected to be operational for regular research use by the end of the award period. For the purposes of the MRI program, proposals must be for *either* acquisition or development of a single instrument or for equipment that, when combined, serves as an integrated research instrument (physical or virtual). The MRI program does not support the acquisition or development of a suite of instruments to outfit research laboratories/facilities or to conduct independent research activities simultaneously. Further guidance on appropriate requests can be found in the MRI Frequently Asked Questions (FAQs) at <http://www.nsf.gov/od/oiia/programs/mri>.

Instrument acquisition or development proposals that request funds from NSF in the range \$100,000-\$4 million will be accepted from all eligible organizations. Proposals that request funds from NSF less than \$100,000 will also be accepted from all eligible organizations for the disciplines of mathematics or social, behavioral and economic sciences and from non-Ph.D.-granting institutions of higher education for all NSF-supported disciplines.

Cost-sharing at the level of 30% of the total project cost is required for Ph.D.-granting institutions of higher education and for non-degree-granting organizations. Non-Ph.D.-granting institutions of higher education are exempt from the cost-sharing requirement.

Please see the solicitation text for definitions of organizational types used for the MRI program.

Cognizant Program Officer(s):

- Dr. Randy L. Phelps, Staff Associate, telephone: (703) 292-8040, email: mri@nsf.gov
- Dr. Craig C. Henderson, Staff Associate, telephone: (703) 292-8040, email: mri@nsf.gov

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

- 47.041 --- Engineering
- 47.049 --- Mathematical and Physical Sciences
- 47.050 --- Geosciences
- 47.070 --- Computer and Information Science and Engineering
- 47.074 --- Biological Sciences
- 47.075 --- Social Behavioral and Economic Sciences
- 47.076 --- Education and Human Resources
- 47.078 --- Office of Polar Programs
- 47.079 --- Office of International Science and Engineering
- 47.080 --- Office of Cyberinfrastructure
- 47.081 --- Office of Experimental Program to Stimulate Competitive Research

Award Information

Anticipated Type of Award: Standard Grant

Estimated Number of Awards: 175 awards: Proposals that request funds from NSF in the range \$100,000-\$4 million will be accepted from all eligible organizations. Proposals that request funds from NSF less than \$100,000 will also be accepted from all eligible organizations for the disciplines of mathematics or social, behavioral and economic sciences and from non-Ph.D.-granting institutions of higher education for all NSF-supported disciplines.

Anticipated Funding Amount: \$90,000,000 Proposals submitted in response to this program solicitation will be competing for about \$90 million, pending availability of funds and quality of proposals. Up to \$35 million of these funds will be available to support proposals requesting \$1-\$4 million from NSF, pending overall proposal pressure and quality.

Eligibility Information

Organization Limit:

Proposals may only be submitted by the following:

- Organizations that may apply for the MRI program:

Submission Eligibility

Proposals may only be submitted by domestic (United States) organizations located in the United States,

its territories or possessions, as follows:

1. Institutions of higher education (Ph.D.-granting and non-Ph.D.-granting), acting on behalf of their faculty members, that are accredited in and have a campus in the United States, its territories or possessions. Distinct academic campuses (e.g., that award their own degrees, have independent administrative structures, admissions policies, alumni associations, etc.) within multi-campus systems qualify as separate submission-eligible institutions.
2. Not-for-profit, non-degree-granting domestic U.S. organizations that include (but are not limited to) independent museums and science centers, observatories, research laboratories, professional societies, and similar organizations that are directly associated with the Nation's research or educational activities. These organizations must have an independent, permanent administrative organization (e.g., an office of sponsored research) located in the United States, its territories or possessions, and have 501(c)(3) tax status.
3. To facilitate access to unique instrumentation for a broad user base of U.S. scientists and engineers, and to encourage collaboration and sharing of state-of-the-art instrumentation, the MRI program accepts proposals from consortia of organizations. Consortium proposals may be submitted as follows:
 - 3a. Legally incorporated, not-for-profit consortia including two or more submission-eligible organizations as described in items (1) and (2) above may submit proposals on behalf of the consortium. The cover sheet must clearly indicate the consortium nature of the proposal in the title. Such a consortium is one with an independent administrative structure (e.g., an office of sponsored research) located in the United States, its territories or possessions and 501(c)(3) status.
 - 3b. Submission-eligible organizations as described in items (1) and (2) above may submit proposals on behalf of other consortia. The cover sheet must clearly indicate the consortium nature of the proposal in the title, and it must identify a PI and co-PI(s) from at least two MRI submission-eligible organizations participating in the consortium. These consortium proposals may also include as partners U.S. organizations that are not eligible to submit MRI proposals (e.g., Federal labs).
4. Commercial U.S. organizations, especially small businesses with strong capabilities in scientific or engineering research or education, are eligible for instrument development support only through subawards as private sector partners with submitting organizations; they may not submit proposals. Such partnerships must be substantive and meaningful, and build capacity for instrument development within the submitting organization(s). Title to the resulting instrument should be retained by the submitting organization(s). Commercial organizations must be based in the United States, its territories or possessions.

Prospective PIs may contact the cognizant MRI program officers regarding organizational eligibility, and for information on other NSF funding opportunities for instrumentation; see also Section IX for a list of related NSF programs for research instrumentation.

Additionally:

- o **MREFC-related Proposals:** The MRI program will not accept proposals for instruments that augment the scope of an NSF Major Research Equipment and Facilities Construction (MREFC) project if that project is currently receiving funding through the MREFC account.
- o **FFRDC-related Proposals:** Proposals for the acquisition or development of an instrument to be located at a facility of another Federal agency or one of their Federally Funded Research and Development Centers (FFRDCs) must be submitted as a consortium proposal by an MRI submission-eligible organization as described in item 3(b) above. The proposal must include the facility/FFRDC (or its managing organization) as a partner in the consortium, even if the role of the FFRDC in the project is solely to house the instrument. The instruments must make unique contributions to the needs of researchers elsewhere or establish access to new multi-user facilities. The current list of FFRDCs can be found at: <http://www.nsf.gov/statistics/nsf05306/>.

Organization Categories

All MRI eligible organizations belong to one of the following three categories:

- A. **Ph.D.-granting institutions of higher education** are accredited colleges and universities that have awarded more than 20 Ph.D.s or D.Sci.s in all NSF-supported fields during the combined previous two academic years. Additionally, any organization that awards Ph.D. or D.Sci. in NSF-supported fields is considered to be a Ph.D.-granting institution if the only degrees it awards in NSF-supported fields are post-Bachelor's degrees.
- B. **Non-Ph.D.-granting institutions of higher education** are accredited colleges and universities (including two-year community colleges) that award Associate's degrees, Bachelor's degrees, and/or Master's degrees in NSF-supported fields, but have awarded 20 or fewer Ph.D./D.Sci. degrees in all NSF-supported fields during the combined previous two academic years.
- C. **Non-degree-granting organizations** are those that do not award Associate's degrees, Bachelor's degrees, Master's degrees, and/or Ph.D.s or D.Sci.s. Non-degree-granting organizations also include institutions of higher education that award all of their degrees outside of NSF-supported fields.

Please review NSF's Guide to Programs for NSF-supported fields of science, mathematics and engineering at http://www.nsf.gov/funding/browse_all_funding.jsp.

PI Limit:

None Specified

Limit on Number of Proposals per Organization:

Three (3) as described below.

If three proposals are submitted, at least one of the proposals must be for instrument development (i.e., no more than two proposals may be for instrument acquisition).

To ensure a balanced instrumentation award portfolio at diverse organizations, across varied research topics, and in support of a broadly inclusive science and engineering workforce across the entire Nation, the MRI program requires that an MRI-eligible organization may, as a performing organization, submit or be included as a significantly funded¹ subawardee in no more than three MRI proposals. To promote instrumentation development, the program requires that if an organization submits or is included as a significantly funded¹ subawardee in three MRI proposals, at least one of the three proposals must be for instrument development.

NSF reserves the right to carefully examine development proposals to ensure that they meet the requirements for this proposal type (see Section II). If a proposal submitted as development is deemed to be an acquisition proposal, the proposal will be returned without review if any of the organizations involved have already submitted two acquisition proposals.

¹An unfunded collaboration does not count against the submission limit. Inclusion as a funded subawardee on a development proposal at a level in excess of 20% of the total budget request from NSF, or on any acquisition proposal, will be counted against an organization's proposal submission limit. However, if a subaward to an organization in a *development proposal* is 20% or less of the proposal's total budget request from NSF, the subawardee's submission limit will not be affected. For subawards within a linked collaborative proposal, the 20% threshold applies to the budget request from NSF in the proposal containing the subaward(s), not to the combined budget request from NSF for the collaborative project.

Note: The 30% cost-sharing requirement applies to only the portion of the total project cost budgeted to non-exempt organization(s), including those participating through subawards. Cost-sharing is required for Ph.D.-granting institutions of higher education and for non-degree-granting organizations. Non-Ph.D.-granting institutions of higher education are exempt from the cost-sharing requirement. See section V.B. for specific information on cost-sharing calculations and the solicitation text for definitions of organizational types used for the MRI program.

Limit on Number of Proposals per PI:

None Specified

Proposal Preparation and Submission Instructions

A. Proposal Preparation Instructions

- **Letters of Intent:** Not Applicable
- **Preliminary Proposal Submission:** Not Applicable
- **Full Proposals:**
 - Full Proposals submitted via FastLane: NSF Proposal and Award Policies and Procedures Guide, Part I: Grant Proposal Guide (GPG) Guidelines apply. The complete text of the GPG is available electronically on the NSF website at:
http://www.nsf.gov/publications/pub_summ.jsp?ods_key=gpg.
 - Full Proposals submitted via Grants.gov: NSF Grants.gov Application Guide: A Guide for the Preparation and Submission of NSF Applications via Grants.gov Guidelines apply (Note: The NSF Grants.gov Application Guide is available on the Grants.gov website and on the NSF website at:
http://www.nsf.gov/publications/pub_summ.jsp?ods_key=grantsgovguide)

B. Budgetary Information

- **Cost Sharing Requirements:** Cost Sharing is required. Please see the full text of this solicitation for further information.
- **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

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

January 27, 2011

4th Thursday in January thereafter

Proposal Review Information Criteria

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

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

A. Program Goals

The Major Research Instrumentation (MRI) Program serves to increase access to shared instruments for scientific and engineering research and research training in our Nation's institutions of higher education, museums, science centers, and not-for-profit organizations. This program especially seeks to improve the quality and expand the scope of research and research training in science and engineering, by providing shared instrumentation that fosters the integration of research and education in research-intensive learning environments. Development and acquisition of research instrumentation for shared inter- and/or intra-organizational use is encouraged, as are development efforts that leverage the strengths of private sector partners as appropriate to the goals of the MRI Program. The MRI Program is intended to assist with the acquisition or development of research instrumentation that is, in general, too costly and/or not appropriate for support through other NSF programs. Instruments are expected to be operational for regular research use by the end of the award period.

For the purposes of the MRI Program, proposals must be for *either* acquisition *or* development (see Section II.A.2), and can be for a single instrument or for equipment that when combined serves as an integrated research instrument (physical or virtual). The MRI program does not support the acquisition or development of a suite of instruments to outfit research laboratories/facilities or to conduct independent experiments simultaneously. Further guidance on appropriate requests can be found in the MRI FAQs at <http://www.nsf.gov/od/oiia/programs/mri>.

B. Recent History

The America COMPETES Act of 2007 (Public Law 110-69) establishes the maximum award limit for MRI proposals commensurate with the budget for the program. For the current MRI competition, the maximum amount of an award under the program is \$4 million. Proposals that request funds from NSF in the range \$100,000-\$4 million will be accepted from all eligible organizations. Proposals that request funds from NSF less than \$100,000 will be accepted from all eligible organizations for the disciplines of mathematics or social, behavioral and economic sciences and from non-Ph.D.-granting institutions of higher education for all NSF-supported disciplines.

Cost-sharing at the level of 30% of the total project cost is required for Ph.D.-granting institutions and non-degree-granting organizations. Only non-Ph.D.-granting academic institutions of higher education are exempt from the cost-sharing requirement. Inclusion of voluntary committed cost sharing is prohibited. Please see definitions of organization types used by the MRI program (Section IV).

II. PROGRAM DESCRIPTION

A. General Information

1. MRI Program Purpose and Goals

The primary purpose of the MRI program is to facilitate scientific and engineering research and research training through the acquisition or development of major research instrumentation. The MRI program does not support requests for general purpose ancillary laboratory equipment or multiple instruments that serve to outfit a laboratory or research environment. The MRI program also does not support the acquisition or development of instrumentation used primarily for science and engineering education courses (this and other uses of the instrumentation may serve to facilitate the broader impacts of the project).

An MRI proposal must conform to the program's primary goals of:

- Supporting the acquisition of shared major state-of-the-art instrumentation, thereby improving access to, and increased use of, modern research and research training instrumentation by scientists, engineers, and graduate and undergraduate students;
- or
- Fostering the development of next generation of major instrumentation, resulting in new instruments that are more widely used, and/or open up new areas of research and research

training;

and

- Enabling academic departments, disciplinary and cross-disciplinary units, and organizations and multi-organization collaborations to integrate research with education.

An MRI proposal may also address additional program goals which include:

- Supporting the acquisition and development of research instrumentation that makes use of, advances, and/or expands the Nation's cyberinfrastructure and/or high performance computing capability (while avoiding duplication of services already provided by NSF investments). MRI proposals that are aligned with the evolving NSF vision (see "Cyberinfrastructure Framework for 21st Century Science and Engineering" at <http://www.nsf.gov/pubs/2010/nsf10015/nsf10015.pdf>), including those that support development of computational and data-intensive science and engineering programs, or that provide pathways to regional and national infrastructure, are strongly encouraged.
- Promoting substantive and meaningful partnerships for instrument development between the academic and private sectors. MRI proposals involving partnerships with applicability to NSF-supported centers, including the NSF Industry/University Cooperative Research Centers (I/UCRCs) program are encouraged. Such proposals are expected to create innovative ideas or products with wide scientific or commercial impact.

2. MRI Program Scope

The MRI program assists in the acquisition or development of major research instrumentation that is, in general, too costly or not appropriate for support through other NSF programs. An MRI proposal must be for either the acquisition or development of a single instrument or for equipment that when combined serves as an integrated research instrument (physical or virtual).

a. Instrument Acquisition

The science and engineering research enterprise relies on the availability of modern instrumentation, much of which can be acquired with little/no modification from existing sources. For this reason, an acquisition proposal is characterized by a rapid implementation requiring limited personnel and having little risk to complete. An MRI acquisition proposal may also be characterized by a demonstrated need for the purchase or upgrade of a generally available, yet sophisticated, instrument with little or no modification. An acquisition proposal must meet these guidelines to be considered for the MRI program.

b. Instrument Development

The academic research enterprise relies on new generations of sophisticated research instrumentation and NSF encourages individual investigators, and teams of researchers, to apply for instrument development support. A development proposal is characterized by a demonstrated need for a new or upgraded instrument that can provide enhanced or potentially transformative use and performance, open up new areas of research and research training, and/or have potential as a commercial product. "Performance" may include accuracy, reliability, resolving power, throughput speed, sample capacity, flexibility of operation, breadth of application, user-friendliness, and/or new types of measurement or information gathering. An MRI development proposal is characterized by a need for longer timescales involving design, construction, testing and commissioning such that the equipment cost may not represent the largest portion of the budget. A development proposal also tends to involve greater risk to complete.

A development proposal must describe the improved performance of the new instrument over existing options and the expected impact of this new instrument on the broader research community. The MRI program does not consider the acquisition of individual pieces of equipment simply combined in a new system, the mere purchase of an upgrade, or the development of enabling technologies, devices, products or techniques to constitute instrument development. The purchase of a computer(s) and the subsequent porting of application-specific software also does not constitute instrument development. A development proposal with commercial partners must be substantive, meaningful and build capacity for instrument development within academic settings; a proposal that "outsources" the development to the commercial partner will be considered to be an acquisition proposal by the MRI program.

A development proposal must meet the above guidelines to be considered for the MRI program. NSF reserves the right to carefully examine development proposals to ensure that they are appropriate for this proposal category and adequately distinguish between instrument development and research.

The MRI program will NOT support proposal requests for any of the following:

- Construction, renovation or modernization of rooms, buildings or research facilities - this category refers to the space where sponsored or unsponsored research activities (including research training) occur, whether "bricks-and-mortar", mobile, or virtual;
- Large, specialized experimental facilities that are constructed with significant amounts of common building material using standard building techniques. Instruments in general can be decoupled from the structure or environment that contains them;
- General purpose and supporting equipment - this category includes (but is not limited to) general purpose ancillary computers or laboratory instruments. Supporting equipment refers to basic, durable components of a research facility that are integral to its operation (e.g., fume hoods, elevators, laboratory casework and cryogen storage systems);
- Sustaining infrastructure and/or building systems - this category may include electrical and plumbing systems, routine multi-purpose computer networks, standard safety features, and other general purpose systems (e.g., HVAC, electrical generation and distribution systems, toxic waste removal systems, and telecommunications equipment).
- General purpose platforms or environments - this category may include (but is not limited to) general purpose fixed or non-fixed structures or manned vehicles whose role is to host or transport an instrument.

- Instrumentation used primarily for science and engineering education courses. Other programs at NSF (e.g., the Course, Curriculum, and Laboratory Improvement program - http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=5741) provide funding for the development of exemplary courses and teaching practices, including instrumentation to support such projects;`

B. Eligible Fields of Science and Engineering

Proposals for instrumentation will be considered for all NSF-supported fields of science, mathematics, and engineering. Researchers using this instrumentation need not be supported by NSF or the Federal government.

The program will not provide support for instrumentation to be used in medical education (such as medical school courses). Instrumentation intended for research with disease-related goals, including work on the etiology, diagnosis or treatment of physical or mental disease, abnormality, or malfunction in human beings or animals, is normally not supported. Instrumentation for research on animal models of such conditions or the development or testing of drugs or other procedures for their treatment also is not eligible for support. However, instrumentation for bioengineering research, with diagnosis- or treatment-related goals that applies engineering principles to problems in biology and medicine, while also advancing engineering knowledge, is eligible for support. Instrumentation for bioinformatics, biocomputing and bioengineering research to aid persons with disabilities also is eligible.

III. AWARD INFORMATION

Proposals submitted in response to this program solicitation will be competing for about \$90 million, pending availability of funds and quality of proposals.

Proposals that request funds from NSF in the range \$100,000-\$4 million will be accepted from all eligible organizations. Proposals that request funds from NSF less than \$100,000 will also be accepted from all eligible organizations for the disciplines of mathematics or social, behavioral and economic sciences and from non-Ph.D.-granting institutions of higher education for all NSF-supported disciplines.

Proposers may request an award period up to three years for acquisition proposals and up to five years for development proposals. The anticipated earliest starting date is August 01 after submission.

IV. ELIGIBILITY INFORMATION

Organization Limit:

Proposals may only be submitted by the following:

- Organizations that may apply for the MRI program:

Submission Eligibility

Proposals may only be submitted by domestic (United States) organizations located in the United States, its territories or possessions, as follows:

1. Institutions of higher education (Ph.D.-granting and non-Ph.D.-granting), acting on behalf of their faculty members, that are accredited in and have a campus in the United States, its territories or possessions. Distinct academic campuses (e.g., that award their own degrees, have independent administrative structures, admissions policies, alumni associations, etc.) within multi-campus systems qualify as separate submission-eligible institutions.
2. Not-for-profit, non-degree-granting domestic U.S. organizations that include (but are not limited to) independent museums and science centers, observatories, research laboratories, professional societies, and similar organizations that are directly associated with the Nation's research or educational activities. These organizations must have an independent, permanent administrative organization (e.g., an office of sponsored research) located in the United States, its territories or possessions, and have 501(c)(3) tax status.
3. To facilitate access to unique instrumentation for a broad user base of U.S. scientists and engineers, and to encourage collaboration and sharing of state-of-the-art instrumentation, the MRI program accepts proposals from consortia of organizations. Consortium proposals may be submitted as follows:
 - 3a. Legally incorporated, not-for-profit consortia including two or more submission-eligible organizations as described in items (1) and (2) above may submit proposals on behalf of the consortium. The cover sheet must clearly indicate the consortium nature of the proposal in the title. Such a consortium is one with an independent administrative structure (e.g., an office of sponsored research) located in the United States, its territories or possessions and 501(c)(3) status.
 - 3b. Submission-eligible organizations as described in items (1) and (2) above may submit proposals on behalf of other consortia. The cover sheet must clearly indicate the consortium nature of the proposal in the title, and it must identify a PI and co-PI(s) from at least two MRI submission-eligible organizations participating in the consortium. These consortium proposals may also include as partners U.S. organizations that are not eligible to submit MRI proposals (e.g., Federal labs).
4. Commercial U.S. organizations, especially small businesses with strong capabilities in scientific or engineering research or education, are eligible for instrument development support only through subawards as private sector partners with submitting organizations; they may not submit proposals. Such partnerships must be substantive and meaningful, and build capacity for instrument development within the submitting organization(s). Title to the resulting instrument should be retained by the submitting organization(s). Commercial organizations must be based in the United States, its territories or possessions.

Prospective PIs may contact the cognizant MRI program officers regarding organizational eligibility, and for information on other NSF funding opportunities for instrumentation; see also Section IX for a list of related NSF programs for research instrumentation.

Additionally:

- **MREFC-related Proposals:** The MRI program will not accept proposals for instruments that augment the scope of an NSF Major Research Equipment and Facilities Construction (MREFC) project if that project is currently receiving funding through the MREFC account.
- **FFRDC-related Proposals:** Proposals for the acquisition or development of an instrument to be located at a facility of another Federal agency or one of their Federally Funded Research and Development Centers (FFRDCs) must be submitted as a consortium proposal by an MRI submission-eligible organization as described in item 3(b) above. The proposal must include the facility/FFRDC (or its managing organization) as a partner in the consortium, even if the role of the FFRDC in the project is solely to house the instrument. The instruments must make unique contributions to the needs of researchers elsewhere or establish access to new multi-user facilities. The current list of FFRDCs can be found at: <http://www.nsf.gov/statistics/nsf05306/>.

Organization Categories

All MRI eligible organizations belong to one of the following three categories:

- Ph.D.-granting institutions of higher education** are accredited colleges and universities that have awarded more than 20 Ph.D.s or D.Sci.s in all NSF-supported fields during the combined previous two academic years. Additionally, any organization that awards Ph.D. or D.Sci. in NSF-supported fields is considered to be a Ph.D.-granting institution if the only degrees it awards in NSF-supported fields are post-Bachelor's degrees.
- Non-Ph.D.-granting institutions of higher education** are accredited colleges and universities (including two-year community colleges) that award Associate's degrees, Bachelor's degrees, and/or Master's degrees in NSF-supported fields, but have awarded 20 or fewer Ph.D./D.Sci. degrees in all NSF-supported fields during the combined previous two academic years.
- Non-degree-granting organizations** are those that do not award Associate's degrees, Bachelor's degrees, Master's degrees, and/or Ph.D.s or D.Sci.s. Non-degree-granting organizations also include institutions of higher education that award all of their degrees outside of NSF-supported fields.

Please review NSF's Guide to Programs for NSF-supported fields of science, mathematics and engineering at http://www.nsf.gov/funding/browse_all_funding.jsp.

PI Limit:

None Specified

Limit on Number of Proposals per Organization:

Three (3) as described below.

If three proposals are submitted, at least one of the proposals must be for instrument development (i.e., no more than two proposals may be for instrument acquisition).

To ensure a balanced instrumentation award portfolio at diverse organizations, across varied research topics, and in support of a broadly inclusive science and engineering workforce across the entire Nation, the MRI program requires that an MRI-eligible organization may, as a performing organization, submit or be included as a significantly funded¹ subawardee in no more than three MRI proposals. To promote instrumentation development, the program requires that if an organization submits or is included as a significantly funded¹ subawardee in three MRI proposals, at least one of the three proposals must be for instrument development.

NSF reserves the right to carefully examine development proposals to ensure that they meet the requirements for this proposal type (see Section II). If a proposal submitted as development is deemed to be an acquisition proposal, the proposal will be returned without review if any of the organizations involved have already submitted two acquisition proposals.

¹An unfunded collaboration does not count against the submission limit. Inclusion as a funded subawardee on a development proposal at a level in excess of 20% of the total budget request from NSF, or on any acquisition proposal, will be counted against an organization's proposal submission limit. However, if a subaward to an organization in a *development proposal* is 20% or less of the proposal's total budget request from NSF, the subawardee's submission limit will not be affected. For subawards within a linked collaborative proposal, the 20% threshold applies to the budget request from NSF in the proposal containing the subaward(s), not to the combined budget request from NSF for the collaborative project.

Note: The 30% cost-sharing requirement applies to only the portion of the total project cost budgeted to non-exempt organization(s), including those participating through subawards. Cost-sharing is required for Ph.D.-granting institutions of higher education and for non-degree-granting organizations. Non-Ph.D.-granting institutions of higher education are exempt from the cost-sharing requirement. See section V.B. for specific information on cost-sharing calculations and the solicitation text for definitions of organizational types used for the MRI program.

Limit on Number of Proposals per PI:

None Specified

Additional Eligibility Info:

V. PROPOSAL PREPARATION AND SUBMISSION INSTRUCTIONS

A. Proposal Preparation Instructions

Full Proposal Preparation Instructions: Proposers may opt to submit proposals in response to this Program Solicitation via Grants.gov or via the NSF FastLane system.

- Full proposals submitted via FastLane: Proposals submitted in response to this program 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/publications/pub_summ.jsp?ods_key=gpg. Paper copies of the GPG may be obtained from the NSF Publications Clearinghouse, telephone (703) 292-7827 or by e-mail from nsfpubs@nsf.gov. Proposers are reminded to identify this program solicitation number in the program 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.
- Full proposals submitted via Grants.gov: Proposals submitted in response to this program solicitation via Grants.gov should be prepared and submitted in accordance with the NSF Grants.gov Application Guide: A Guide for the Preparation and Submission of NSF Applications via Grants.gov. The complete text of the NSF Grants.gov Application Guide is available on the Grants.gov website and on the NSF website at: (http://www.nsf.gov/publications/pub_summ.jsp?ods_key=grantsgovguide). To obtain copies of the Application Guide and Application Forms Package, click on the Apply tab on the Grants.gov site, then click on the Apply Step 1: Download a Grant Application Package and Application Instructions link and enter the funding opportunity number, (the program solicitation number without the NSF prefix) and press the Download Package button. Paper copies of the Grants.gov Application Guide also may be obtained from the NSF Publications Clearinghouse, telephone (703) 292-7827 or by e-mail from nsfpubs@nsf.gov.

In determining which method to utilize in the electronic preparation and submission of the proposal, please note the following:

Collaborative Proposals. All collaborative proposals submitted as separate submissions from multiple organizations must be submitted via the NSF FastLane system. Chapter II, Section D.4 of the Grant Proposal Guide provides additional information on collaborative proposals.

___1. Cover Sheet

FastLane Users: Select this program solicitation number from the pull down list. Where asked to identify the NSF Unit of Consideration, select the most appropriate Division within an NSF Directorate or the most appropriate Office to consider your proposal. "Major Research Instrumentation" will be automatically selected as the program for your proposal. Selection of more than one unit for consideration is encouraged for multi-/cross-/inter-/trans-disciplinary efforts (PIs are especially encouraged to submit a list of suggested reviewers, as a **Single-Copy Document**, for these types of proposals – see the GPG or NSF Grants.gov Application Guide for additional information).

Grants.gov Users: The program solicitation number will be pre-populated by Grants.gov on the NSF Grant Application Cover Page. Grants.gov users should refer to Section VI.1.2. of the NSF Grants.gov Application Guide for specific instructions on how to designate the NSF Unit of Consideration. Select "Major Research Instrumentation" as the program for your proposal. Please note that simultaneously submitted collaborative applications must be submitted via FastLane as Grants.gov does not currently support this functionality.

The project title must be concise and convey the primary purpose of the proposal, e.g., "MRI: Acquisition of ___," or "MRI: Development of ___." Consortium project titles must also be identified in the title: "MRI Consortium: Acquisition of ___," or "MRI Consortium: Development of ___."

NSF applications identify only a single PI and up to four co-PIs with those titles. For the purposes of the MRI program, other major participants may be indicated as "senior personnel," and they should be listed in the Proposal Budget, even if they are receiving no support.

Note: Please see the GPG for new guidance on specifying the Project/Performance Site Primary Location.

Note: NSF reserves the right to assign proposals to programs that are deemed to be the most appropriate for review. PI selection of Divisions and/or Offices is advisory to NSF.

___2. **Project Summary** (maximum length, 1 page). The Project Summary must consist of two parts, separated in different paragraphs: 1) provide a succinct summary of the **Intellectual Merit** of the proposal; 2) describe the **Broader Impacts** for the proposed project. Proposals that do not *separately* address both of these merit review criteria within the one-page Project Summary will be returned without review.

___3. **Project Description** (maximum length, 15 pages, including all figures and charts). The project description must include subsections (a)-(e), and address the intellectual merits and broader impacts of the proposed effort. Suggested lengths for individual subsections are provided for guidance only.

a. Instrument Location and Type.

- Indicate in a single separate line the physical location of the proposed instrument as follows, Instrument Location: _____.
- Additionally, the following information is requested to assist the MRI program in reporting on the types of instruments the program supports. The information has no bearing on funding decision. On a single separate line, using the codes below (and also available at <http://www.nsf.gov/od/oia/programs/mri>), please indicate the instrument type as follows, Instrument Code: _____.

CODE	MRI INSTRUMENT CATEGORY	EXAMPLES
MRI-21	Microscopes	Light, Electron, Scanning Probe Microscopes
MRI-24	Spectrometers	Mass, NMR, Other Spectrometers
MRI-29	3D Imaging Systems	Tomography Systems, X-ray Diffractometers, Functional MRI systems
MRI-31	Cyberinstrumentation	Computation/Data Intensive/Visualization Systems
MRI-34	Nano/Micro-fabrication	Lithography/Patterning, Thin Film Deposition Tools
MRI-39	Engineering Testbeds	
MRI-41	Genome Sequencers	
MRI-44	Wet Lab Instruments	Bio Assay / Chemical Assay / Chromatography / Sorting / Separation Instruments
MRI-49	Telescopes/Detectors	Telescopes, CCDs, IR Arrays, Spectrographs
MRI-51	Remote/Autonomous Sensors	Distributed Environmental Sensor Networks, Remote Sensing (radar, sonar, etc.) Instruments

MRI-54	Motion/Eye Tracking
MRI-59	Structural Deformation Sensor Systems
MRI-61	Sub-atomic Particle Detector/Array
MRI-64	Bulk Property Measurement
MRI-69	Particle Image Velocimetry
MRI-71	Other

- b. **Research Activities to be Enabled** (suggested length: 9 pages for instrument acquisition; 4 pages for instrument development). Describe the research and research training activities and projects that will be enabled with the desired instrumentation, and any sources that may support those activities and projects. Researchers using this instrumentation need not be supported by NSF or the Federal government, but reviewers should understand how users of the instrument will support and disseminate their research. In narrative or tabular form describe the personnel by research area, number, and type (e.g., senior personnel, postdoctoral fellows, graduate students, undergraduate students). Include only those who will most actively use the instrumentation for research and research training on a regular basis. Other more minor users of the instrument, when applicable, should be described in a more condensed format.

This section must also include "Results from Prior NSF MRI Support" if the PI or co-PIs have participated as PIs or co-PIs in NSF MRI awards within the past five-year period. This section also should include information on the operations and maintenance, downtime and usage history on the previously funded instrument. If the PI or co-PIs have not participated as PIs or co-PIs in NSF MRI awards within the past five-year period, standard GPG reporting requirements for "Results from Prior NSF Support" should be followed with preference given to a discussion of any instrumentation awards.

- c. **Description of the Research Instrumentation and Needs** (Suggested length: 2 pages for instrument acquisition; 6 pages for instrument development).

An acquisition proposal should include a technical description of the requested instrumentation, including manufacturer and model number where appropriate. This section should clearly explain why the requested equipment is needed. The existence and availability of comparable instrumentation (at organizations in close geographical proximity, or otherwise accessible through collaborations or cyberinfrastructure) should be outlined in the Facilities, Equipment & Other Resources - see Section 8 below.

For a proposal to develop an instrument, present the rationale for the new instrument, the design concept, and the development strategy and methods in sufficient detail to allow for the evaluation of its technical feasibility. Reviewers must be able to evaluate the expected capabilities of the instrument upon completion, and its likely availability for shared use at the end of the award period. Provide appropriate preliminary results from existing equipment, or appropriate calculations and/or models to indicate the added utility or enhanced performance (e.g., reliability, sensitivity, capacity, stability, resolution, or signal-to-noise ratio) to be achieved by the new instrument. Justify the necessity and adequacy of the new instrumentation for the proposed research projects, with reference to instruments that are currently available.

Proposals involving large collaborations should describe the importance and priority of the requested instrument in the overall efforts being undertaken by the collaboration. A supplemental document (see Section V.A.9.g) confirming the priority is encouraged.

- d. **Impact on Research and Training Infrastructure** (suggested length: 2 pages). Describe how the instrument will serve to attract researchers and make a substantial improvement in the institution's capabilities to conduct leading-edge research. Describe how the instrument will improve the quality of student education, research and research training. Any proposal requesting direct student support in operations and maintenance or development efforts must justify that involvement in terms of both project needs and the training of the next generation of instrumentalists (reviewers will be asked to evaluate the appropriateness of this type of involvement). Proposals should also address how the instrumentation will broaden the participation in science and engineering research by women, underrepresented minorities, and persons with disabilities.

Proposals requesting over \$2 million must address the potential impact of the instrument at both the National level and on the research community of interest. Concrete plans for enabling access by external users (including those from non-Ph.D. and/or minority-serving institutions) through physical access and/or cyberinfrastructure must be presented, and the uniqueness of the requested instrumentation must be described.

- e. **Management Plan** (suggested length: 2 pages for instrument acquisition; 3 pages for instrument development). To be considered by the MRI program, all proposals **must** include a management plan, as outlined below.

Instrument acquisition proposals. Given the relatively high operations and maintenance costs of major research instrumentation, investigators seeking support for such instrumentation **must** provide detailed business and management plans with information on space, technical staffing for operations and maintenance, training of users, access for external users, and the sources of funding and plans for long-term operations and maintenance, including:

- Describe the facility in which the instrument will be placed.
- Specify how and by whom the requested instrumentation will be operated and maintained (both during the award period and longer-term). Inclusion of a letter documenting the performing organization's commitment to operations and maintenance is required as a supplemental document.
- Describe the anticipated costs and the technical expertise needed to maintain and operate the instrument. If the expertise is not currently available, describe how it will be obtained.
- Describe procedures for allocating the instrument time, if appropriate, and describe plans for attracting and supporting new users. Include information on anticipated usage and downtime.

Sufficient detail should be given to enable reviewers to evaluate whether the project includes appropriate technical expertise and infrastructure to allow effective usage of the instrument by the end of the award period, as well as facilitate multi-user accessibility.

Instrument development proposals. Given the often complex nature of instrument development efforts, investigators seeking support for such an instrument **must** provide detailed management plans for the design, construction and commissioning phases of the project, including discussion of required personnel and anticipated costs in each phase of the project, risk mitigation, and knowledge transfer upon completion, including:

- Describe the design, construction and commissioning phases of the project, including the work breakdown structure of the project activities (i.e., activities broken into tasks). Include a description of parts and materials, the estimated deliverables, associated timelines and the anticipated cost of each activity.

- Describe the technical expertise that is needed, and that will be available, to execute each activity. Describe the organization of the project staff and methods of assessing performance. For each member of the team, include a description of the responsibilities and explain why a given position is necessary for the completion of the design and construction of the new instrument.
- Assess the risks associated with each activity and describe potential methods for mitigating the risks, and for re-analyzing and modifying the project plan to keep it within scope, schedule and budget.
- Include plans for making the instrument design readily available to other researchers, for example by means of publications, by transferring the technology to other U.S. academic, industrial, or government laboratories, and/or by commercializing the instrument.
- Include plans for the operations and maintenance of the instrument, including procedures for allocating time on the instrument if appropriate. Describe plans for attracting and supporting new users and information on anticipated usage and downtime if appropriate. Inclusion of a letter documenting the performing organization's commitment to operations and maintenance is required as a supplemental document.

Sufficient detail should be provided to allow reviewers to analyze the likely success, cost and benefit of the development effort.

Note: Proposals for the acquisition or development of an instrument to be located at an organization other than, or away from, the submitting organization must describe the rationale for performance of all or part of the project at the specified location(s) and provide, if appropriate, a (one-page maximum) supplementary document providing the host organization's commitment to house the instrument. Please see the GPG for additional requirements for specifying the Project/Performance Site Primary Location.

___ **4. References Cited.** The format must follow the guidelines as given in the GPG or NSF Grants.gov Application Guide.

___ **5. Biographical Sketches.** The proposal must include two-page biographical sketches of the PI and any Co-PI(s) (i.e., those personnel listed on the cover sheet), as well as any designated senior personnel (see Section V.A.1) who are major users/developers of the relevant research instrumentation. If applicable, also provide a separate biographical sketch of the individual responsible for the management of the instrument. *These are the only Biographical Sketches that are allowed.* The format for biographical sketches should follow the guidelines as given in the GPG or NSF Grants.gov Application Guide.

___ **6. Budget and Budget Justification.** Provide yearly and cumulative budget pages, listing those eligible project costs that NSF is being asked to fund. *The cumulative amount requested represents NSF's contribution to the total project cost and does not include the organization's cost sharing (when applicable).* The total project cost should be clearly stated in the budget justification. The budget justification, which must not exceed three pages, should itemize and explain all eligible project costs, assigning each to either the budget for funding from NSF or the organization's cost-sharing (if appropriate). All budget items (particularly those for operations and maintenance in acquisition proposals and personnel support in development proposals) must be well-justified and commensurate with the scale and complexity of the instrumentation and/or development effort.

Cost-sharing, when required, should be shown explicitly in the proposal budget pages. In the budget justification specify the sources and amounts of eligible cost-sharing funds (see Section V.B below for further information on cost-sharing) and a projection of when they will be available.

Note that cost-sharing, when applicable, is an eligibility requirement, must come from non-Federal sources and must occur during the award period. Inclusion of voluntary committed cost sharing is prohibited. See Section V.B. for detailed budgetary information.

___ **7. Current and Pending Support.** Provide a listing for only the PI and Co-PIs (i.e., those listed on the cover sheet), as well as designated senior personnel (see Section V.A.1).

___ **8. Facilities, Equipment, and Other Resources.** Provide a listing of similar and/or related instrumentation at or near the performing organization as "Other Resources."

___ **9. Supplementary Documents.** For Grants.gov users, supplementary documents should be attached in the R&R Other Project Information Form.

Required:

- For all proposals:** Provide a statement from each sponsored research office (including subawardees) classifying the performing organization(s) as either non-Ph.D.-granting, Ph.D.-granting, or non-degree-granting (as defined in Section IV).
- For all proposals:** Include a letter documenting the commitment(s) for operations and maintenance of the instrument (during the award period and longer term). This letter (two-page maximum) should also list the MRI awards made to the organization during the previous five years and briefly describe the status of the instrumentation obtained from each award.
- For all proposals:** All proposals *must* include a supplementary document of no more than two pages labeled "Data Management Plan". This document should describe how the proposal will conform to NSF policy on the dissemination and sharing of research results, which provides that investigators are expected to share with other researchers, at no more than incremental cost and within a reasonable amount of time, the primary data, samples, physical collections, software, curriculum materials, and other supporting materials created or gathered in the course of work under NSF grants. Alternatively the Data Management Plan may assert the absence of the need for such plans.

Please note that the Data Management Plan will be reviewed as an integral part of the proposal and that Fastlane will not permit submission of a proposal that is missing a Data Management Plan. Please see the GPG for additional details.
- When applicable:** Proposals that include subawards (except for development proposals with subawards to institutions that do not exceed 20% of the total amount requested from NSF), must include statements from subawardee sponsored research offices, acknowledging that this proposal is included as part of their submission limit. Otherwise, an organization may exceed its submission limit, with the result that the proposal including the subaward will be returned without review.
- When applicable:** Each proposal that requests funding to support postdoctoral researchers must include, as a supplementary document, a description of the mentoring activities that will be provided for such individuals. The mentoring plan must not exceed one page.
- When applicable:** A letter (one-page maximum) documenting the organization's commitment for required cost-sharing, if applicable, must be included.
- When applicable:** If a proposed effort involves a private sector partner, a large collaboration or an organization (as opposed to an individual(s) serving as a partner, a letter (one page maximum) confirming the participation must be included. Proposals involving large collaborations are encouraged to utilize this letter to document the priority of the requested instrument in the overall efforts being undertaken by the collaboration.
- When applicable:** If the proposal involves organizations other than the submitting organization, list all partners.
- When applicable:** Proposals for the acquisition or development of an instrument to be located at an organization other than the submitting organization must provide a (one-page maximum) supplementary document stating the host

organization's commitment to house the instrument.

Encouraged:

- a. Inclusion of itemized vendor quotes is strongly advised for all MRI proposals. Although a proposal might reference and have a quote for a specific make and model, the proposer is reminded that his/her organization's procurement processes must be utilized to establish the appropriate item(s) to be purchased.
- b. Statements from individuals, on institutional letterhead, confirming substantive collaboration efforts and/or usage of the instrument may be submitted, but they **must** follow *only* the format indicated below.

To: NSF MRI Coordinator

By signing below I acknowledge that I am listed as a collaborator and/or major user of the instrument on this MRI proposal, entitled " _____ *proposal title* _____," with _____ *PI name* _____ as the Principal Investigator. I agree to undertake the tasks assigned to me, as described in the proposal, and I commit to provide or make available the resources therein designated to me.

Signed: _____ Print Name: _____

Date: _____ Institution: _____

The proposal body itself should describe the nature and need for a collaboration, and/or describe the major users and their need for the instrument. Statements of collaboration beyond that specified above, including letters of support/endorsement, are not allowed. Each statement must be signed by the designated collaborator/user. Requests to collaborators for these statements should be made by the PI well in advance of the proposal submission deadline, since they must be included at the time of the proposal submission.

Not Allowed:

- a. Statements of collaboration beyond that specified above, including letters of support/endorsement, are not allowed.
- b. Impact Statements and Eligibility Statements from the NSF "Research in Undergraduate Institutions" (RUI) program are not allowed; the certification statement indicating the type of performing organization, as defined by the MRI program, is instead required for MRI proposals.
- c. Documentation that refers to other proposals being submitted by an organization (e.g., letters indicating which projects were selected through an internal competition) are not allowed.
- d. Other documentation not specifically required or encouraged above is not allowed.

10. Single Copy Documents

Encouraged:

List of Suggested Reviewers (optional, but encouraged). Proposers are encouraged to submit a list of suggested reviewers (including affiliation) whom they believe are especially well qualified to review the proposal as a "Single-Copy Document"; *this is especially encouraged for multi/inter/trans-disciplinary proposals*. Proposers may also list persons they would prefer not review the proposal, indicating why. Please see the GPG or NSF Grants.gov Application Guide for additional information.

NOTES:

- 1. **The following information applies only for those MRI proposals that will be reviewed in the Office of Polar Programs:**

The Office of Polar Programs (OPP) strongly encourages MRI proposals related to all aspects of polar research supported by the Foundation. For any proposals requiring access to the polar regions, investigators must contact appropriate OPP Science Program Officers (http://www.nsf.gov/staff/staff_list.jsp?org=OPP&from_org=OPP) for guidance about submitting information needed to assess logistical support requirements (if any); this (in coordination with the cognizant MRI program officer to ensure MRI compliance) should be done during the proposal development. Before submitting proposals requiring field support in the Antarctic contact Jessie Crain (email: jlcrain@nsf.gov).

B. Budgetary Information

Cost Sharing: Cost Sharing is required

- a. **General Information:** Cost-sharing at the level of 30% of the total project cost is required by Ph.D.-granting academic institutions of higher education and by non-degree-granting organizations. Only non-Ph.D.-granting academic institutions of higher education are exempt from the cost-share requirement. See Section IV for definitions of organizations as used by the MRI program.
- b. **Calculating Cost-share Amounts**

The following sections explain how to calculate the cost-sharing requirements for your MRI proposal, and what costs may be included in your cost-sharing.

Cost sharing, when required, must be at the level of 30% of the total project cost, **not** 30% of the amount requested of NSF. Cost sharing is an MRI eligibility criterion and not a review criterion; inclusion of voluntary committed cost sharing is prohibited.

To calculate cost sharing:

- Add all eligible project costs (see below) for your project to determine the **total project cost**. This is the total amount that is required to complete the project as described in the proposal (minus any ineligible costs).
- Calculate 70 percent of your total project cost. This is the amount that corresponds to "Funds Requested by Proposer", and reflects only those costs that are requested from NSF and included in the budget request.
- Calculate 30 percent of your total project cost. This is the cost-share amount that must be included as a commitment from the organization.
- The amount requested from NSF plus the cost-sharing amount equals the total project cost.

Note concerning discounts: Manufacturers' discounts are strongly encouraged for reducing project cost but they may not be

designated as cost sharing.

Note concerning subawards: Cost-sharing applies to the portions of a budget that go to organizations that are not exempt from the cost-sharing requirement, even through subawards.

- If all organizations (submitting and subawardees) are required to cost-share, the 30% cost-sharing requirement applies to the total project cost for the proposal.
- If the submitting organization is required to cost-share, but one or more subawardee is exempt from the cost-sharing requirement, the 30% cost-sharing requirement applies to only the portion of the total project cost budgeted to the non-exempt organization(s).
- If the submitting organization is exempt from the cost-sharing requirement, but one or more subawardee is subject to cost-sharing, the 30% cost-sharing requirement applies to only the portion of the total project cost budgeted to the non-exempt organization(s).

There is no requirement as to which organization (submitting, subawardee or third party) must provide the cost-sharing amount, only that the required amount (from non-Federal sources) be included in the proposal.

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 (2 CFR § 215.23). 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 required by the NSF solicitation and 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.

Administrative requirements related to cost sharing may be found in 2 CFR § 215.23, "Cost Sharing or Matching." For additional information on cost principles consult: 2 CFR Part 220, Cost Principles for Educational Institutions (OMB Circular A-21); or 2 CFR Part 230, Cost Principles for Nonprofit Organizations (OMB Circular A-122), as applicable.

Other Budgetary Limitations:

Eligible Project Costs

The amount of the NSF request should be based on the net price of the instrumentation, including all academic discounts and other special purchase arrangements.

- Acquisition proposals:** Eligible project costs are limited to instrument purchase, installation, commissioning, and calibration, and the direct and indirect costs of operations and maintenance, and other appropriate technical support during the award period. Requests for operations and maintenance must be justified in terms of the scale and scope of the instrumentation. Salary support, including fringe benefits and indirect costs, is allowed *only* for personnel directly involved in operations and maintenance of the instrument. Any request for personnel must justify the skill level and time commitment of the person responsible for operations and maintenance. Any proposal requesting direct student support in operations and maintenance must justify the involvement in terms of both instrument needs and the training the next generation of instrumentalists – reviewers will be asked to evaluate the appropriateness of this type of involvement. Training costs that are directly related to proper operations and maintenance are eligible, but expenses associated with the training of users are not allowed. Support for research to be conducted with the instrument, outreach, and publication costs are not allowed, nor is travel associated with conferences and/or collaborations.
- Development proposals:** Eligible project costs are limited to parts and materials needed for the construction of the instrument, commissioning costs (including relevant operations and maintenance expenses), as well as the direct and indirect costs associated with support of personnel engaged strictly in the instrument development effort. Requests for personnel support must include a description of the responsibilities of the project co-workers and explain why a given position is necessary for the completion of the design, construction and commissioning of the new instrument. Any proposal requesting direct student support in development efforts must justify the involvement in terms of both project needs and training the next generation of instrumentalists – reviewers will be asked to evaluate the appropriateness of this type of involvement. Sufficient detail should be given to allow reviewers to analyze the cost of the new technology. Support for research to be conducted using the instrument *after* commissioning, along with long term operations and maintenance, is not allowed. Travel costs that are integral to the development work are eligible expenses, but travel associated with conferences and training is not allowed.

Note: A supplementary Data Management Plan is required for all NSF proposals submitted after January 18, 2011. The intent is to ensure that awards conform to NSF policy on the dissemination and sharing of research results, which provides that investigators are expected to share with other researchers, at no more than incremental cost and within a reasonable amount of time, the primary data, samples, physical collections, software, curriculum materials, and other supporting materials created or gathered in the course of work under NSF grants. As a result MRI eligible expenses include incremental costs associated with the implementation (but not the operation) of this plan.

Checklist

___ Is the subject matter appropriate for the MRI program? Refer to Section II.A for General Information on the MRI program.

___ Is the subject matter appropriate for NSF? Refer to Section II.B: Eligible Fields of Science and Engineering.

___ Is the performing organization adhering to the proposal submission limit? Refer to Section IV.

___ Are font sizes and margins consistent with the Grant Proposal Guide?

___ **Cover Sheet** (Refer to Section V.A: Full Proposal Preparation Instructions):

___ Is the proposal properly identified as "MRI:Acquisition", "MRI:Development", "MRI Consortium:Acquisition", or "MRI Consortium:Development" on the Cover Sheet?

___ If the instrument is to be placed at a facility of another Federal agency or one of their FFRDCs, has the proposal been properly structured and identified as a Consortium proposal?

___ **Project Summary** (Refer to Section V.A: Full Proposal Preparation Instructions):

___ Is the Project Summary 1 page or less in length?

___ Does the Project Summary explicitly address the Intellectual Merit of the proposed work in separate paragraphs?

___ Does the Project Summary explicitly address the Broader Impacts of the proposed work in a separate paragraph?

___ **Project Description** (Refer to Section V.A: Full Proposal Preparation Instructions):

___ Is the Project Description 15 pages or less in length, and does it also address both Intellectual Merit and Broader Impacts?

___ Has the location of the instrument been identified and explained?

___ Are Results from Prior MRI Support, if applicable, addressed?

___ Has an adequate management plan been included in a separate section?

___ **Budget:** (Refer to Section V.B on Budgetary Information):

___ Are all of the items in the budget eligible costs?

___ Is the magnitude of the budget request consistent with the solicitation and the proposed project?

___ Is a subaward included as part of the proposal? If yes, has the amount of the subaward been included in the Budget Pages, and has a separate subaward budget been included? If applicable, is there a statement from the subawardee sponsored research office certifying that this proposal is included in the organization's proposal limit?

___ **Is cost-sharing required?**

___ If yes, is the correct amount (30% of the total project cost, *not* 30% of the NSF request) listed in the Budget Pages?

___ If yes, is there a letter (one-page maximum) of commitment from the organization, included in the supplemental documentation, confirming the source and availability of funds?

___ **Supplemental Documents:** Refer to Section V.A: Proposal Preparation Instructions.

___ Has a (up to two pages) Data Management Plan been included?

___ Is there a statement(s) indicating the type (Ph.D.-granting institution of higher education, non-Ph.D.-granting institution of higher education, or non-degree-granting organization) of each performing organization, including subawardees?

___ Is there a (two-page maximum) letter that documents the organization's commitment for operation and maintenance of the instrument, and also includes a list and status of the MRI awards made to the organization during the previous five years?

___ If applicable, is a postdoctoral mentoring plan included?

___ Is the proper format of any included statements of collaboration followed?

___ Has *only* required or encouraged supplemental documentation been included?

___ Have all subawardees (when applicable) included statements acknowledging that this proposal is included in their submission limit?

___ **Single Copy Documents**

___ Is an optional, but encouraged, list of suggested reviews included?

Proposals must meet administrative and technical requirements to be accepted for the MRI competition. The following are some key reasons for Return without Review:

- Proposals that do not contain, as a supplemental document, a (up to 2 page) Data Management Plan.
- Proposals that do not contain, as supplemental documents, a signed statement from each sponsored research office (including subawardees) classifying the performing organization as either non-Ph.D.-granting, Ph.D.-granting, or non-degree-granting; see Section IV for definitions of organization type as used by the MRI program.
- Applicable proposals that do not indicate appropriate levels of cost-sharing, including required documentation demonstrating organizational cost-sharing commitment (Sections V.A and V.B). Cost-sharing at the level of 30% of the total project cost is required for Ph.D.-granting institutions of higher education and for non-degree-granting organizations. Only non-Ph.D.-granting institutions of higher education are exempt from the cost-sharing requirement. Please see Section IV for definitions of organization types as used by the MRI program.
- Proposals that do not separately address the Intellectual Merit and Broader Impacts review criteria in the Project Summary. Discussions must be provided in separate paragraphs.
- Proposals requesting funding to support postdoctoral researchers that do not include, as a supplementary document, a description of the mentoring activities that will be provided for such individuals. The mentoring plan must not exceed one page;
- Proposals describing activities that fall outside of the scope of those supported by the MRI program (Section II.A).
- Proposals describing activities that fall outside of the scope of those supported by NSF (Section II.B).
- Proposals that exceed an organization's submission limit (Section IV).
- Proposals to place an instrument at a facility of another Federal agency or one of their FFRDCs that are not submitted by consortia (Section IV).
- Proposals for instruments that augment the scope of a project currently receiving funding through the NSF Major Research Equipment and Facilities Construction (MREFC) account (Section IV).
- Proposals that do not contain required supplemental documentation, or that contain supplemental documentation other than those required and/or encouraged by the MRI program (as prescribed in Section V.A) and by the Grant Proposal Guide(GPG);
- Proposals that do not conform to font, margin and page limitations.
- Proposals that do not contain a Management Plan in the Project Description (Section V.A).
- Applicable proposals that do not contain "Results from Prior MRI Support" in the Project Description (Section V.A).

C. Due Dates

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

January 27, 2011

4th Thursday in January thereafter

D. FastLane/Grants.gov Requirements

- **For Proposals Submitted Via FastLane:**

Detailed technical instructions regarding the technical aspects of 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 solicitation should be referred to the NSF program staff contact(s) listed in Section VIII of this funding opportunity.

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. Further instructions regarding this process are available on the FastLane Website at: <https://www.fastlane.nsf.gov/fastlane.jsp>.

- **For Proposals Submitted Via Grants.gov:**

Before using Grants.gov for the first time, each organization must register to create an institutional profile. Once registered, the applicant's organization can then apply for any federal grant on the Grants.gov website. The Grants.gov's Grant Community User Guide is a comprehensive reference document that provides technical information about Grants.gov. Proposers can download the User Guide as a Microsoft Word document or as a PDF document. The Grants.gov User Guide is available at: <http://www.grants.gov/CustomerSupport>. In addition, the NSF Grants.gov Application Guide provides additional technical guidance regarding preparation of proposals via Grants.gov. For Grants.gov user support, contact the Grants.gov Contact Center at 1-800-518-4726 or by email: support@grants.gov. The Grants.gov Contact Center answers general technical questions related to the use of Grants.gov. Specific questions related to this program solicitation should be referred to the NSF program staff contact(s) listed in Section VIII of this solicitation.

Submitting the Proposal: Once all documents have been completed, the Authorized Organizational Representative (AOR) must submit the application to Grants.gov and verify the desired funding opportunity and agency to which the application is submitted. The AOR must then sign and submit the application to Grants.gov. The completed application will be transferred to the NSF FastLane system for further processing.

VI. NSF PROPOSAL PROCESSING AND REVIEW PROCEDURES

Proposals received by NSF are assigned to the appropriate NSF program where they will be reviewed if they meet NSF proposal preparation requirements. All proposals are carefully reviewed by a scientist, engineer, or educator serving as an NSF Program Officer, and usually by three to ten other persons outside NSF who are experts in the particular fields represented by the proposal. These reviewers are selected by Program Officers charged with the oversight of the review process. Proposers are invited to suggest names of persons they believe are especially well qualified to review the proposal and/or persons they would prefer not review the proposal. These suggestions may serve as one source in the reviewer selection process at the Program Officer's discretion. Submission of such names, however, is optional. Care is taken to ensure that reviewers have no conflicts of interest with the proposal.

A. NSF Merit Review Criteria

All NSF proposals are evaluated through use of the two National Science Board (NSB)-approved merit review criteria: intellectual merit and the broader impacts of the proposed effort. In some instances, however, NSF will employ additional criteria as required to highlight the specific objectives of certain programs and activities.

The two NSB-approved merit review criteria are listed below. 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 the reviewer is qualified to make judgements.

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, original, or potentially transformative 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?

Examples illustrating activities likely to demonstrate broader impacts are available electronically on the NSF website at: <http://www.nsf.gov/pubs/gpg/broaderimpacts.pdf>.

Mentoring activities provided to postdoctoral researchers supported on the project, as described in a one-page supplementary document, will be evaluated under the Broader Impacts criterion.

NSF staff also 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:

Within the evaluation criteria stated above, MRI program reviewers will assess the following:

All Proposals.

- The extent to which the proposed project will make a substantial improvement in the institution's capabilities to conduct leading-edge research, to provide research experiences for undergraduate students using leading edge-facilities, and to broaden the participation in science and engineering research by women, underrepresented minorities and persons with disabilities.

Instrument Acquisition Proposals.

- The extent of shared use of the instrumentation for research and/or research training.
- Whether the management plan includes sufficient infrastructure and technical expertise to allow effective usage of the instrument; and provides the organization's commitments for operations and maintenance.
- Whether the request for operations and maintenance is justified and reasonable in magnitude. If direct support for student involvement in operations and maintenance is requested, reviewers will be asked to evaluate the involvement in terms of both instrument needs and training the next generation of instrumentalists.
- Plans for using the new or enhanced research capability in research and research training.
- In addition, for instrument acquisition proposals of \$2 million or above, the impact of the instrumentation at the National level and on the research community of interest.

Instrument Development Proposals:

- The adequacy of the management plan. Does the plan have a realistic, detailed schedule? Are mechanisms in place to deal with potential risks?
- The availability of appropriate technical expertise to design and construct the instrument. If direct support for student involvement in development efforts is requested, reviewers will be asked to evaluate the involvement in terms of both project needs and training the next generation of instrumentalists.
- The appropriateness of the cost of the new technology.
- The need for development of a new instrument. Will the proposed instrument enable enhanced performance over existing instruments, or new types of measurement or information gathering? Is there a strong need for the new instrument in the larger user community?

B. Review and Selection Process

Proposals submitted in response to this program solicitation will be reviewed by Ad hoc Review 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.

After scientific, technical and programmatic review and consideration of appropriate factors, the NSF Program Officer recommends to the cognizant Division Director whether the proposal should be declined or recommended for 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 deadline or target date, or receipt date, whichever is later. The interval ends when the Division Director accepts the Program Officer's 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 Officer. In addition, the proposer will receive an explanation of the decision to award or decline funding.

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 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.B. 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 (GC-1); * or Research Terms and Conditions * and (5) any announcement or other NSF issuance that may be incorporated by reference in the award letter. Cooperative agreements also are administered in accordance with NSF Cooperative Agreement Financial and Administrative Terms and Conditions (CA-FATC) and the applicable Programmatic Terms and Conditions. NSF awards are electronically signed by an NSF Grants and Agreements Officer and transmitted electronically to the organization via e-mail.

*These documents may be accessed electronically on NSF's Website at http://www.nsf.gov/awards/managing/award_conditions.jsp?org=NSF. Paper copies may be obtained from the NSF Publications Clearinghouse, telephone (703) 292-7827 or by e-mail from nsfpubs@nsf.gov.

More comprehensive information on NSF Award Conditions and other important information on the administration of NSF awards is contained in the *NSF Award & Administration Guide (AAG)* Chapter II, available electronically on the NSF Website at http://www.nsf.gov/publications/pub_summ.jsp?ods_key=aag.

C. Reporting Requirements

For all multi-year grants (including both standard and continuing grants), the Principal Investigator must submit an annual project report to the cognizant Program Officer at least 90 days before the end of the current budget period. (Some programs or awards require more frequent project reports). Within 90 days after expiration of a grant, the PI also is required to submit a final project report, and a project outcomes report for the general public.

Failure to provide the required annual or final reports, or the project outcomes report will delay NSF review and processing of any future funding increments as well as any pending proposals for that PI. 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. Such reports provide information on activities and findings, project participants (individual and organizational) 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. Submission of the report via FastLane constitutes certification by the PI that the contents of the report are accurate and complete. The project outcomes report must be prepared and submitted using Research.gov. This report serves as a brief summary, prepared specifically for the public, of the nature and outcomes of the project. This report will be posted on the NSF website exactly as it is submitted by the PI.

The following topics should be addressed in all MRI annual and final project reports:

For Instrument Acquisition Proposals

- Status of order, delivery, and installation;
- Brief description of research projects that were enabled by the instrument;
- Number of students with hands-on experience, to include demographic information (indicate undergraduate or graduate, gender, ethnicity/race, disability, major). Note: provide percentages for demographic data; do NOT identify specific students by ethnicity, race or disability status;
- A list of the research groups granted access and the titles of the research and institutional affiliation, to include both on-campus and outside users;
- Data on usage and downtime;
- A short description of the management plan, noting deviations from the plan as described in the proposal;
- Changes in sources and/or scheduling of cost-sharing;
- Description of setbacks and resulting change of plans; and
- Information on broader impacts activities to date.

For Instrument Development Proposals

- Status of development effort to date;
- Number of student participants, to include demographic information (indicate undergraduate or graduate, gender, ethnicity/race, disability, major). Note: provide percentages for demographic data; do NOT identify specific students by ethnicity, race or disability status;
- Information on broader impacts activities to date;
- New industrial partnerships;
- Technology transfer (e.g., design and/or instrument);
- A short description of the management plan, noting deviations from the plan as described in the proposal;
- Changes in sources and/or scheduling of cost-sharing;
- Description of setbacks and resulting change of plans; and
- Modifications in timeline.

VIII. AGENCY CONTACTS

General inquiries regarding this program should be made to:

- Dr. Randy L. Phelps, Staff Associate, telephone: (703) 292-8040, email: mri@nsf.gov
- Dr. Craig C. Henderson, Staff Associate, telephone: (703) 292-8040, email: mri@nsf.gov

For questions related to the use of FastLane, contact:

- FastLane Help Desk, telephone: 1-800-673-6188; e-mail: fastlane@nsf.gov.

For questions relating to Grants.gov contact:

- Grants.gov Contact Center: If the Authorized Organizational Representatives (AOR) has not received a confirmation message from Grants.gov within 48 hours of submission of application, please contact via telephone: 1-800-518-4726; e-mail: support@grants.gov.

Additional contact information for NSF's Major Research Instrumentation Program is as follows:

Office of Integrative Activities
Major Research Instrumentation Program
National Science Foundation, Room 1270
4201 Wilson Boulevard
Arlington, VA 22230
(703) 292-8040

E-Mail: mri@nsf.gov

Website: <http://www.nsf.gov/od/oiia/programs/mri>

IX. OTHER INFORMATION

The NSF Website provides the most comprehensive source of information on NSF Directorates (including contact information),

programs and funding opportunities. Use of this Website by potential proposers is strongly encouraged. In addition, National Science Foundation Update is a free e-mail subscription service designed to keep potential proposers and other interested parties apprised of new NSF funding opportunities and publications, important changes in proposal and award policies and procedures, and upcoming NSF Regional Grants Conferences. Subscribers are informed through e-mail when new publications are issued that match their identified interests. Users can subscribe to this service by clicking the "Get NSF Updates by Email" link on the [NSF web site](#).

Grants.gov provides an additional electronic capability to search for Federal government-wide grant opportunities. NSF funding opportunities may be accessed via this new mechanism. Further information on Grants.gov may be obtained at <http://www.grants.gov>.

RELATED NSF PROGRAMS FOR RESEARCH INSTRUMENTATION

Program Title	Solicitation
BIO: Improvements in Facilities, Communications, and Equipment at Biological Field Stations and Marine Laboratories (FSML)	NSF 05-550
BIO: Instrument Development for Biological Research (IDBR)	NSF 08-566
CISE/CNS: Computing Research Infrastructure (CRI)	NSF 08-570
ENG: Small Business Innovation Research and Small Business Technology Transfer Programs Phase I (SBIR/STTR)	NSF 09-605
GEO/AGS: Atmospheric Sciences Mid-Size Infrastructure Opportunity	NSF 07-602
GEO/AGS: Graduate Student and Optical Instrumentation Support Related to the Advanced Modular Incoherent Scatter Radar (AMISR)	NSF 05-564
GEO/EAR: Earth Sciences: Instrumentation and Facilities (EAR/IF)	NSF 09-517
GEO/OCE: Oceanographic Centers and Facilities: Oceanographic Instrumentation	NSF PD 98-5410
GEO/OCE: Oceanographic Technology and Interdisciplinary Coordination Program (OTIC)	NSF PD 98-1680
MPS/AST: Advanced Technologies and Instrumentation (ATI)	No Publication Number
MPS/CHE: Chemistry Research Instrumentation and Facilities: Departmental Multi-User Instrumentation (CRIF:MU)	NSF 09-546
MPS/CHE: Chemistry Research Instrumentation and Facilities: Instrumentation Development (CRIF:ID)	NSF 04-534
MPS/DMR: Instrumentation for Materials Research	NSF 07-600
MPS/DMR: Instrumentation for Materials Research - Major Instrumentation Projects (IMR-MIP)	NSF 09-547
MPS/DMS: Scientific Computing Research Environment for the Mathematical Sciences (SCREMS)	NSF 07-502
OCI: Strategic Technologies for CyberInfrastructure	PD 11-7684
Crosscutting: CyberInfrastructure for Environmental Observatories: Prototype Systems to Address Cross-Cutting Needs (CEO:P)	NSF 06-505
Crosscutting: High Performance Computing System Acquisition: Towards a Petascale Computing Environment for Science and Engineering	NSF 08-573

ABOUT THE NATIONAL SCIENCE FOUNDATION

The National Science Foundation (NSF) is an independent Federal agency created by the National Science Foundation Act of 1950, as amended (42 USC 1861-75). The Act states the purpose of the NSF is "to promote the progress of science; [and] to advance the national health, prosperity, and welfare by supporting research and education in all fields of science and engineering."

NSF funds research and education in most fields of science and engineering. It does this through grants and cooperative agreements to more than 2,000 colleges, universities, K-12 school systems, businesses, informal science organizations and other research organizations throughout the US. The Foundation accounts for about one-fourth of Federal support to academic institutions for basic research.

NSF receives approximately 40,000 proposals each year for research, education and training projects, of which approximately 11,000 are funded. In addition, the Foundation receives several thousand applications for graduate and postdoctoral fellowships. The agency operates no laboratories itself but does support National Research Centers, user facilities, certain oceanographic vessels and Antarctic research stations. The Foundation also supports cooperative research between universities and industry, US participation in international scientific and engineering efforts, and educational activities at every academic level.

Facilitation Awards for Scientists and Engineers with Disabilities provide funding for special assistance or equipment to enable persons with disabilities to work on NSF-supported projects. See Grant Proposal Guide Chapter II, Section D.2 for instructions regarding preparation of these types of proposals.

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 about NSF programs, employment or general information. TDD may be accessed at (703) 292-5090 and (800) 281-8749, FIRS at (800) 877-8339.

The National Science Foundation Information Center may be reached at (703) 292-5111.

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: [nsfpubs@nsf.gov](mailto:nspfubs@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; and 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 proposer 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 or other entities needing information regarding applicants or nominees as part of a joint application review process, or in order to coordinate programs or policy; 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," 69 Federal Register 26410 (May 12, 2004), and NSF-51, "Reviewer/Proposal File and Associated Records," 69 Federal Register 26410 (May 12, 2004). 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 Office of Management and Budget (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 the burden estimate and any other aspect of this collection of information, including suggestions for reducing this burden, to:

Suzanne H. Plimpton
Reports Clearance Officer
Division of Administrative Services
National Science Foundation
Arlington, VA 22230

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