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CHE-DMR-DMS Solar Energy Initiative (SOLAR)

PROGRAM SOLICITATION
NSF 09-604

REPLACES DOCUMENT(S):
NSF 08-598



National Science Foundation

Directorate for Mathematical & Physical Sciences
Division of Chemistry
Division of Materials Research
Division of Mathematical Sciences

Preliminary Proposal Due Date(s) (required) (due by 5 p.m. proposer's local time):

December 08, 2009

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

March 10, 2010

REVISION NOTES

Compared to the previous solicitation ([NSF 08-598](#)) the present one has a more clearly delineated description of additional review criteria, eligibility and submission requirements, and administrative aspects related to proposal submission and review.

Please be advised that the *NSF Proposal & Award Policies & Procedures Guide* (PAPPG) includes revised guidelines to implement the mentoring provisions of the America COMPETES Act (ACA) (Pub. L. No. 110-69, Aug. 9, 2007.) As specified in the ACA, each proposal that requests funding to support postdoctoral researchers must include a description of the mentoring activities that will be provided for such individuals. Proposals that do not comply with this requirement will be returned without review (see the PAPP Guide Part I: *Grant Proposal Guide* Chapter II for further information about the implementation of this new requirement)

As announced on May 21st, proposers must prepare and submit proposals to the National Science Foundation (NSF) using the NSF FastLane system at <http://www.fastlane.nsf.gov/>. This approach is being taken to support efficient Grants.gov operations during this busy workload period and in response to OMB direction guidance issued March 9, 2009. NSF will continue to post information about available funding opportunities to Grants.gov FIND and will continue to collaborate with institutions who have invested in system-to-system submission functionality as their preferred proposal submission method. NSF remains committed to the long-standing goal of streamlined grants processing and plans to provide a web services interface for those institutions that want to use their existing grants management systems to directly submit proposals to NSF.

SUMMARY OF PROGRAM REQUIREMENTS

General Information

Program Title:

CHE-DMR-DMS Solar Energy Initiative (SOLAR)

Synopsis of Program:

The purpose of the CHE-DMR-DMS Solar Energy Initiative is to support interdisciplinary efforts by groups of researchers to address the scientific challenges of highly efficient harvesting, conversion, and storage of solar energy. Groups must include three or more co-Principal Investigators of whom one must be a researcher in chemistry, a second in materials, and a third in mathematical sciences in areas supported by the Divisions of Chemistry, Materials Research, and Mathematical Sciences, respectively. The intent is to encourage new collaborations in which the mathematical sciences are linked in a synergistic way with the chemical and materials sciences to develop novel, potentially transformative approaches in an area of much activity but largely incremental advances. Successful proposals will offer potentially transformative projects, new concepts, and interdisciplinary education through research involvement based on the integrated expertise and synergy from the three disciplinary communities.

Cognizant Program Officer(s):

- Carol A. Bessel, (CHE), telephone: (703) 292-4945, email: cbessel@nsf.gov

- Andrew J. Lovinger, (DMR), telephone: (703) 292-4933, email: alovinge@nsf.gov
- Charles D. Pibel, (CHE), telephone: (703) 292-4971, email: cpibel@nsf.gov
- Victor Roytburd, (DMS), telephone: (703) 292-2189, email: vroytbur@nsf.gov
- Linda S Sapochak, (DMR), telephone: (703) 292-4932, email: lsapocha@nsf.gov
- Henry A. Warchal, (DMS), telephone: (703) 292-4861, email: hwarchal@nsf.gov
- Z. C. Ying, (DMR), telephone: (703) 292-8428, email: cying@nsf.gov

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

- 47.049 --- Mathematical and Physical Sciences

Award Information

Anticipated Type of Award: Standard Grant or Continuing Grant

Estimated Number of Awards: 3 to 10

Under this solicitation proposals may be submitted for funding durations up to three years. The budget must be commensurate with the project and thoroughly justified in the proposal. The NSF expects to fund 3 to 10 awards in fiscal year 2010 depending on the quality of submissions and the availability of funds. The anticipated start date of awards is September 2010.

Anticipated Funding Amount: \$7,000,000

Typical award size is expected to be approximately \$500,000 per year and may vary depending on the scope of the proposal.

Eligibility Information

Organization Limit:

Proposals may only be submitted by the following:

- Universities and Colleges - Universities and two- and four-year colleges (including community colleges) accredited in, and having a campus located in the US, acting on behalf of their faculty members. Such organizations also are referred to as academic institutions.

PI Limit:

Proposals, and their associated preliminary proposals, must include three or more co-Principal Investigators (co-PIs) one of whom must be a researcher in chemistry, a second in materials, and a third in mathematical sciences in areas supported by the NSF Divisions of Chemistry, Materials Research, and Mathematical Sciences, respectively.

Limit on Number of Proposals per Organization:

None Specified

Limit on Number of Proposals per PI: 1

An investigator may participate as a PI, co-PI, or other senior research associate on only one proposal and associated preliminary proposal submitted per year in response to this solicitation.

Proposal Preparation and Submission Instructions

A. Proposal Preparation Instructions

- **Letters of Intent:** Not Applicable
- **Preliminary Proposals:** Submission of Preliminary Proposals is required. Please see the full text of this solicitation for further information.
- **Full Proposal Preparation Instructions:** This solicitation contains information that supplements the standard NSF Proposal and Award Policies and Procedures Guide, Part I: Grant Proposal Guide (GPG) proposal preparation guidelines. Please see the full text of this solicitation for further information

B. Budgetary Information

- **Cost Sharing Requirements:** Cost Sharing is not required under this solicitation.
- **Indirect Cost (F&A) Limitations:** Not Applicable
- **Other Budgetary Limitations:** Not Applicable

C. Due Dates

- **Preliminary Proposal Due Date(s) (required)** (due by 5 p.m. proposer's local time):
December 08, 2009
- **Full Proposal Deadline(s)** (due by 5 p.m. proposer's local time):

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: Standard NSF reporting requirements apply.

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I. INTRODUCTION

One of the most important scientific challenges of this age is to discover new methods to secure abundant, low-cost sources of energy to meet humankind's need for sustainable energy and growth. Current global demand for energy is approximately in the 15-terawatt range and is expected to double or triple by mid-century. While increased energy production via traditional methods together with increased efficiency and conservation may alleviate some of the needs, such measures by themselves cannot meet the expected demand in the long run.

Arguably, the most abundant, sustainable source of energy is the Sun, which provides over 150,000 terawatts of power to the Earth, a small fraction of which is sufficient to supply foreseeable energy needs. Thus, one of the greatest scientific opportunities of our time is to learn to efficiently harvest, convert, store, and utilize solar energy.

The National Science Foundation Divisions of Chemistry (CHE), Materials Research (DMR), and Mathematical Sciences (DMS) believe that a new and truly transformative approach to solar energy research may result from an integrally collaborative effort among their three disciplinary communities. As a first step toward encouraging and enabling such research, the Divisions will support a small number of interdisciplinary group projects that address in a potentially transformative way the scientific challenges of efficient harvesting, conversion, and storage of solar energy. Proposed projects must bring together scientists from all three disciplines in an integrally collaborative and synergistic research effort. Only projects of mutual interest to all three Divisions will be supported by this initiative.

II. PROGRAM DESCRIPTION

The purpose of the CHE-DMR-DMS Solar Energy Initiative is to support potentially catalytic interdisciplinary work by groups of researchers to address the scientific challenges of efficient harvesting, conversion, and storage of solar energy. The intent is to encourage new collaborations in which the mathematical sciences are linked in a synergistic way with the chemical and materials

sciences to develop novel, potentially transformative approaches in an area of much activity but largely incremental advances. Since the chemistry and materials communities have already been working jointly, this initiative aims to bring novel mathematical concepts and approaches as a new and central component to this area. This is a way for the MPS chemistry, materials, and mathematics communities to contribute to the broad national portfolio on energy in a unique approach. In pursuit of this goal, each group must include three or more principal investigators, one of whom must be a researcher in chemistry, a second in materials, and a third in mathematical sciences in areas supported by the NSF Divisions of Chemistry, Materials Research, and Mathematical Sciences, respectively.

Projects supported under this activity must be closely collaborative throughout their course and depend for their advancement on the continuous interaction of scientists from all three research communities. The initiative seeks to catalyze transformative breakthroughs in solar energy research from the activities of groups of researchers working jointly at the frontiers of the three disciplines to address fundamental, first-principles questions with fresh perspectives and innovative approaches. A successful proposal should advance the frontiers of the three disciplines and lead to new concepts. It should also encourage the integration of interdisciplinary education with the research, e.g. by offering opportunities for interdisciplinary training to the students/postdoctoral fellows involved.

Research funded under this initiative will investigate novel methods for solar energy harvesting and conversion with potential efficiency substantially beyond that of current technology. Proposed work may include the investigation of energy storage mechanisms as integral parts of new techniques for solar energy harvesting and/or conversion.

Consistent with the NSF mission and the priorities of the Directorate for Mathematical and Physical Sciences (MPS), the focus of this solicitation is on basic research. It is not the intent of this initiative to support work on incremental advances in current technology, on applied engineering approaches, or on variations of PI projects already supported by other sources. This initiative aims to catalyze breakthroughs in the fundamental science underlying solar energy use; distinct sources of support for related engineering challenges are available from other NSF programs.

Principal Investigators should ensure that their proposed project does not substantially overlap with ongoing federally-funded research. Proposals submitted in response to this solicitation may be shared with other federal agencies, including (but not limited to) the Department of Energy, National Institutes of Health, Air Force Office of Scientific Research, Office of Naval Research, and the Intelligence Community. Reviews, including panel summaries, if applicable, may also be shared. The reasons for sharing these proposals and reviews include potential co-funding as well as avoiding duplication of federal funding for a particular research project. If the PI or awardee organization do not wish the proposal to be shared with a particular federal agency or agencies, they should provide a Single Copy Document with the proposal stating which federal funding agencies should be excluded. No explanations for exclusion are required.

III. AWARD INFORMATION

Under this solicitation proposals may be submitted for funding durations up to three years. The budget must be commensurate with the project and thoroughly justified in the proposal. Typical award size is expected to be approximately \$500,000 per year and may vary depending on the scope of the proposal. Awards will be funded as standard grants or continuing grants. The NSF expects to fund 3 to 10 awards in fiscal year 2010, depending on the quality of submissions and the availability of funds. The anticipated start date of awards is September 2010. Estimated program budget, number of awards and average award size/duration are subject to the availability of funds.

IV. ELIGIBILITY INFORMATION

Organization Limit:

Proposals may only be submitted by the following:

- Universities and Colleges - Universities and two- and four-year colleges (including community colleges) accredited in, and having a campus located in the US, acting on behalf of their faculty members. Such organizations also are referred to as academic institutions.

PI Limit:

Proposals, and their associated preliminary proposals, must include three or more co-Principal Investigators (co-PIs) one of whom must be a researcher in chemistry, a second in materials, and a third in mathematical sciences in areas supported by the NSF Divisions of Chemistry, Materials Research, and Mathematical Sciences, respectively.

Limit on Number of Proposals per Organization:

None Specified

Limit on Number of Proposals per PI: 1

An investigator may participate as a PI, co-PI, or other senior research associate on only one proposal and associated preliminary proposal submitted per year in response to this solicitation.

Additional Eligibility Info:

Not applicable.

V. PROPOSAL PREPARATION AND SUBMISSION INSTRUCTIONS

A. Proposal Preparation Instructions

Preliminary Proposals (required): Preliminary proposals are required and must be submitted via the NSF FastLane system.

Preliminary Proposal Preparation Instructions

The following instructions apply to all preliminary proposals:

- One preliminary proposal per project should be submitted.
- Cover Sheet: Select "DMR - MPS SUST ENERGY SCI" as the "Organization Unit for Consideration of This Proposal." Make sure to select the "Preliminary Proposal" checkbox. The requested budget for the full proposal (if invited) is not expected to be known at this stage, but please enter \$1 in the "Requested Amount" box (this allows for the correct FastLane processing).
- Project Summary: In one page describe the Intellectual Merit and Broader Impacts of this project.
- Project Description: Limited to 3 pages. Should contain a description of the proposed research problem and how the team will address it; the research plan and any key preliminary results (if available); the role and relevant expertise of each investigator; the collaborative approach to be used and the expected synergies among the three disciplines; and the broader impacts. Results from prior NSF support are not required for these preliminary proposals.
- Reference Section: Up to 20 key references.
- Biographical Sketches: Use standard Grant Proposal Guide (GPG) guidelines.
- Current and Pending Support: Use standard Grant Proposal Guide (GPG) guidelines.
- The remaining usual proposal sections (Budget, Budget Justification, Facilities and Equipment) are not permitted. Other supporting documentation, including letters of collaboration, are also not permitted in this Preliminary Proposal.
- All other requirements of the Grant Proposal Guide (GPG) should be followed.

Preliminary Proposal Review Procedure

Preliminary proposals will be reviewed by the NSF using internal review. Groups of Program Officers from each of the Divisions of Chemistry, Materials Research, and Mathematical Sciences will independently assess the extent of the group synergy and the potential for transformative breakthroughs presented by each preliminary proposal as described in Section II ("Program Description"). Only those Preliminary Proposals judged by all three Divisions to exhibit the most credible plans for close, synergistic collaborative research with a high transformative potential will be encouraged to submit full proposals. Following this preliminary review, all Principal Investigators will be advised on the same day whether a full proposal is encouraged or discouraged. The NSF will do so 45 days prior to the full proposal submission deadline if possible.

Full Proposal Instructions: Proposals submitted in response to this program solicitation should be prepared and submitted in accordance with the guidelines specified 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-PUBS (7827) or by e-mail from nsfpubs@nsf.gov.

Additional Instructions for Full Proposal Preparation

The standard Grant Proposal Guide instructions for proposal preparation apply, with the following additions.

- a. Cover Sheet: Select "DMR - MPS SUST ENERGY SCI" as the "Organization Unit for Consideration of This Proposal." To facilitate timely processing, the title of the proposal should begin with the designation "SOLAR:" If any proposals are submitted by different institutions as a collaborative group, they all should have the same title and begin with the designation "SOLAR Collaborative:". Make sure that the button asking "If This Is A Preliminary Proposal ..." is UNCHECKED; also make sure to enter your prior preliminary proposal number in the box asking "Show Related Preliminary Proposal Number If Applicable". The co-PIs and scope of the project must be identical to what was submitted under the related preliminary proposal.
- b. Single Copy Documents: Single Copy Documents are used by NSF staff, but are not available to the reviewers. Single Copy Documents may include:
 - Suggested Reviewers and Reviewers Not to Include (optional).
 - If applicable, a statement excluding other federal agencies from seeing your proposal and reviews.
- c. Project Description: In addition to the requirements of the NSF Grant Proposal Guide (GPG), including results from prior NSF support, the narrative should also include the following within the standard 15-page limit:
 - A justification for why a group effort is necessary to carry out the proposed project.
 - A management plan, describing how the group effort will be coordinated.
 - A description of how each researcher will contribute to the project. For senior personnel and other professionals, provide an estimate of the amount of time to be committed to this project. For investigators with other supported research, explain how the investigator will allocate time and effort among the projects.
- d. Supplementary Documentation: If any letters confirming collaboration are included they must be very brief and contain no statements of support or reference, nor details about work to be done under this project that should have been included within the 15 pages of the Project Description.

Proposers are reminded to identify the program solicitation number (NSF 09-604) 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.

B. Budgetary Information

Cost Sharing: Cost sharing is not required under this solicitation.

C. Due Dates

- **Preliminary Proposal Due Date(s) (required)** (due by 5 p.m. proposer's local time):
December 08, 2009
- **Full Proposal Deadline(s)** (due by 5 p.m. proposer's local time):
March 10, 2010

PIs and Sponsored Research Offices (SROs) are advised to submit well before the deadlines to avoid any unexpected submission problems.

D. FastLane Requirements

Proposers are required to prepare and submit all proposals for this program solicitation through use of the NSF FastLane system. Detailed instructions regarding the technical aspects of proposal preparation and submission via FastLane are available at: <http://www.fastlane.nsf.gov/a1/newstan.htm>. For FastLane user support, call the FastLane Help Desk at 1-800-673-6188 or e-mail fastlane@nsf.gov. 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>.

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:

In addition to the National Science Board merit review criteria, reviewers will be asked to assess

- the potential of a transformative breakthrough that addresses in a novel way a major fundamental scientific challenge for efficient harvesting, conversion, or storage of solar energy; and
- the group synergy, role of the mathematical component within the project, and potential for a team effort that will be greater than the sum of its parts.

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.

Failure to provide the required annual or final project reports 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.

VIII. AGENCY CONTACTS

General inquiries regarding this program should be made to:

- Carol A. Bessel, (CHE), telephone: (703) 292-4945, email: cbessel@nsf.gov
- Andrew J. Lovinger, (DMR), telephone: (703) 292-4933, email: alovinge@nsf.gov
- Charles D. Pibel, (CHE), telephone: (703) 292-4971, email: cpibel@nsf.gov
- Victor Roytburd, (DMS), telephone: (703) 292-2189, email: vroytbur@nsf.gov
- Linda S. Sapochak, (DMR), telephone: (703) 292-4932, email: lsapocha@nsf.gov
- Henry A. Warchall, (DMS), telephone: (703) 292-4861, email: hwarchal@nsf.gov
- Z. C. Ying, (DMR), telephone: (703) 292-8428, email: cying@nsf.gov

For questions related to the use of FastLane, contact:

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

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>.

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
or telephone: (703) 292-7827
- **To Locate NSF Employees:** (703) 292-5111

PRIVACY ACT AND PUBLIC BURDEN STATEMENTS

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The National Science Foundation, 4201 Wilson Boulevard, Arlington, Virginia 22230, USA
Tel: (703) 292-5111, FIRS: (800) 877-8339 | TDD: (800) 281-8749

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11/07/06
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