Partnerships for Research and Education in Materials (PREM)

PROGRAM SOLICITATION
NSF 14-606

REPLACES DOCUMENT(S):
NSF 11-562

National Science Foundation

Directorate for Mathematical & Physical Sciences
Division of Materials Research

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

January 07, 2015

IMPORTANT INFORMATION AND REVISION NOTES

Removed DMR institutes from the list of eligible partners.

Any proposal submitted in response to this solicitation should be submitted in accordance with the revised *NSF Proposal & Award Policies & Procedures Guide* (PAPPG) (NSF 16-1), which is effective for proposals submitted, or due, on or after January 25, 2016.

SUMMARY OF PROGRAM REQUIREMENTS

General Information

Program Title:

Partnerships for Research and Education in Materials (PREM)

Synopsis of Program:

The objective of PREM is to broaden participation and enhance diversity in materials research and education by stimulating the development of formal, long-term, multi-investigator, collaborative research and education partnerships between minority-serving colleges/universities and the NSF Division of Materials Research (DMR)-supported centers and/or facilities.

Cognizant Program Officer(s):

Please note that the following information is current at the time of publishing. See program website for any updates to the points of contact.

- Alfredo Caro, 1065 N, telephone: (703) 292-4914, email: jcaro@nsf.gov

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

- 47.049 --- Mathematical and Physical Sciences

Award Information

Anticipated Type of Award: Continuing Grant

Estimated Number of Awards: 4 to 8

Anticipated Funding Amount: $3,000,000

in FY 2015. Awards are anticipated to be $300,000 to $700,000 per year for up to 5 years pending the availability of funds and receipt of competitive proposals.

Eligibility Information

Who May Submit Proposals:

Proposals may only be submitted by the following:

- The proposal must be submitted by a minority-serving college or university. See 'Eligible Academic Institutions' in

this program solicitation for a complete description.

Institutions awarded a PREM in 2012 are not eligible.

Who May Serve as PI:

The Principal Investigator must hold a faculty appointment at an eligible college or university as defined in the 'Eligible Academic Institutions' section. A co-PI must be identified at the DMR-supported center and/or facility. PIs are strongly encouraged to use subawards instead of separately submitted collaborative proposals.

Limit on Number of Proposals per Organization: 1

Limit on Number of Proposals per PI or Co-PI:

There are no restrictions or limits.

Proposal Preparation and Submission Instructions

A. Proposal Preparation Instructions

- **Letters of Intent:** Not required
- **Preliminary Proposal Submission:** Not required
- **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:**

  Inclusion of voluntary committed cost sharing is prohibited.

- **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. submitter's local time):

  January 07, 2015

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

It is recognized that minority-serving colleges and universities and NSF Division of Materials Research (DMR)-supported centers and facilities represent rich resources for improving minority access to careers in materials research. The Partnerships for Research and Education in Materials (PREM) described in this solicitation are designed to improve and strengthen the education infrastructure in materials research, and to increase recruitment, retention, and degree attainment by members of groups underrepresented in materials research and education. Minority groups underrepresented in materials research and education include African-Americans, Alaskan Natives, Native Americans, Hispanic Americans, and Native Pacific Islanders. PREM proposals should seek to answer fundamental materials research questions. Research areas of interest include biomaterials, ceramics, condensed matter physics, materials theory, electronic/photonic materials, metals, polymers, and solid state and materials chemistry.

Traditionally, minority-serving colleges and universities are the leading sources of degrees in materials-related fields awarded to underrepresented minorities in science and engineering in the US. The PREM activity is expected to enhance the quantity and quality of materials research opportunities for students and faculty members at minority-serving institutions. The activity will produce models for developing long-term materials research and education relationships between such colleges and universities and DMR-supported centers and/or facilities.

II. PROGRAM DESCRIPTION

The objective of PREM is to enhance the diversity of the workplace in materials research and education by stimulating the development of formal, long-term, research and education collaborations between minority-serving colleges and universities and DMR-supported centers and facilities.

PREM awards are expected to achieve significant increases in the number and quality of interactions between faculty and students at minority-serving colleges/universities and participants from the DMR-supported centers and facilities. They should result in increasing the number of graduate materials-related degrees for underrepresented minorities and in networking and dissemination of new knowledge. NSF's commitment to broadening participation is embedded in its Strategic Plan. The report "A Framework for Action" outlines the approach (see http://www.nsf.gov/od/broadeningparticipation/bp.jsp)

Funded activities might include, but are not limited to, the development of collaborative and mutually beneficial materials research and education projects, support for graduate and undergraduate students, and exchanges of faculty and students. High school students and teachers may also participate. Of special interest to DMR are activities based on research and education connections between the participants and designed to increase the recruitment, retention and degree attainment by members of underrepresented groups in materials research. The participation of 2-year and 4-year Associate degree-granting institutions in partnership with eligible institutions may be considered for this goal (see Section IV for specific eligibility requirements). While PREM awards engage scientists in fundamental materials research, activities that encourage entrepreneurship are also of special interest to NSF, as are those that offer an international experience. Proposers are encouraged to contact NSF program staff listed in Section VIII to discuss the appropriateness of the planned activities, and check eligibility requirements.

To date, successful PREMs have a strong overlap in research focus with the partner institution, and fully integrate the partner into the research and education activities of the PREM. In addition, successful PREMs have a well-defined management structure, with active internal and external advisory committees.

III. AWARD INFORMATION

NSF expects to make Continuing Grants. The estimated number of awards will be 4 to 8. Awards are anticipated to be effective in July 2015. The total anticipated funding amount in FY 2015 is approximately $3,000,000. Awards are expected to be $300,000 to $700,000 per year for up to 5 years. Estimated program budget, number of awards and average award size/duration are subject to the availability of funds and receipt of competitive proposals.

IV. ELIGIBILITY INFORMATION

Who May Submit Proposals:

Proposals may only be submitted by the following:

- The proposal must be submitted by a minority-serving college or university. See 'Eligible Academic Institutions' in this program solicitation for a complete description.

  Institutions awarded a PREM in 2012 are not eligible.

Who May Serve as PI:

The Principal Investigator must hold a faculty appointment at an eligible college or university as defined in the 'Eligible Academic Institutions' section. A co-PI must be identified at the DMR-supported center and/or facility. PIs are strongly encouraged to use subawards instead of separately submitted collaborative proposals.

Limit on Number of Proposals per Organization: 1

Limit on Number of Proposals per PI or Co-PI:

There are no restrictions or limits.

Additional Eligibility Info:

Eligible Academic Institutions

PREM proposals may be submitted by Institutions of Higher Education (IHEs) that primarily serve underrepresented groups in STEM as listed below. Each PREM proposal must be submitted in collaboration with one or more DMR-supported centers and /or facilities. The proposal may include a subaward to the DMR supported center and/or facility.

Colleges and universities eligible to participate in this activity must be accredited and award degrees in materials-related disciplines and meet at least one of the following criteria:

Note that 2-year and 4-year Associate degree-granting colleges are not eligible to submit a proposal under this solicitation, except where an established degree-granting partnership exists with an eligible institution. However, a 2-year and 4-year Associate degree-granting college may partner with a lead Minority Serving Institution (MSI).

1. *Alaska Native Serving Institutions* (ANSI) - Accredited IHEs that award bachelor level degrees that have a 20 percent or greater enrollment of Alaska Native undergraduate students.
2. *Hispanic Serving Institutions* (HSI) - Accredited IHEs that award bachelor level degrees that have a 25 percent or greater full-time equivalent enrollment of Hispanic undergraduate students.
3. *Historically Black Colleges and Universities* (HBCU) - Identified in the Higher Education Act of 1965, as amended, as any accredited historically black college or university that was established prior to 1964, whose principal mission was, and is, the education of Black Americans.
4. *Minority Serving Institutions* (MSI) - Accredited IHEs that award bachelor level degrees that have an aggregate undergraduate enrollment of American Indian, Alaska Native, Black, Hispanic, and Pacific Islander exceeding 50 percent of total undergraduate enrollment.
5. *Native Hawaiian Serving Institutions* (NHSI) - Accredited IHEs that award bachelor level degrees that have a 10 percent or greater enrollment of Native Hawaiian undergraduate students.
6. *Tribal Colleges and Universities* (TCU) - Accredited IHEs that are formally controlled, or have been formally sanctioned or chartered by the governing body of a Federally recognized Native American tribe or tribes. Specifically, TCUs are those institutions cited in section 532 of the Equity in Educational Land-Grant Status Act of 1994 (7 U.S.C. 301 note), any other institution that qualifies for funding under the Tribally Controlled Community College Assistance Act of 1978 (25 U.S.C. 1801 et seq.), and Dine' College, authorized in the Navajo Community College Assistance Act of 1978, Public Law 95-471, title II (25 U.S.C. 640a note).

Eligible Partners

Eligible partners include DMR-supported centers and facilities. DMR-supported centers include all Materials Research Science and Engineering Centers (MRSECs), the 2 Nanoscale Science and Engineering Centers (NSECs), and the 2 Science and Technology Centers (STCs) funded by DMR. Eligible facilities include DMR-supported synchrotron and neutron facilities and the National High Magnetic Field Laboratory. Note that not all NSF-funded NSECs and STCs are supported by DMR. Only materials research and education activities within the NSEC, STC, or DMR-supported facility are eligible to be part of the proposed partnership. Have the NSF award number of the DMR supported partner ready when calling the program officers. Information on eligible partners may be found at:

DMR-supported centers:

http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=5295&org=DMR&from=home

DMR-supported facilities:

http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=5359&org=DMR&from=home

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.5 of the Grant Proposal Guide provides additional information on collaborative proposals.

See Chapter II.C.2 of the GPG for guidance on the required sections of a full research proposal submitted to NSF. Please note that the proposal preparation instructions provided in this program solicitation may deviate from the GPG instructions.

The following items should be included and/or addressed in the proposal:

1. **Project Description (limit 20 pages).**
   a. *List of Participants (limit 1 page).* Provide a list of participating faculty from all academic institutions. List each faculty participant by full name, and his/her institutional and departmental affiliation. Also, enter each name in "Add/Delete Non Co-PI Senior Personnel" FastLane Form. Grants.gov users: Instructions for entering additional senior project participants are included in Section V.5. of the NSF Grants.gov Application Guide. (Note: All faculty participants should have a biographical sketch and the NSF current and pending support form included in the corresponding section of the proposal.)

   b. *Vision Statement (limit 1 page)*. Provide a clear and concise statement for the vision of the proposed partnership, its overall research / education / outreach goals and its potential impact in broadening participation.

   c. *Results from Prior NSF Support (limit 5 pages)*. New PREM proposals may use this section to describe their scientific and educational achievements under prior NSF support. Collaborative research and related activities funded by other agencies may also be included here. **Re-competing applicants awarded a PREM in 2009** must describe achievements under prior NSF support that pertain to the previous PREM award. Re-competing proposals must provide a "List of publications and patents from prior NSF support" and "Broadening Participation Strategy and Results," which are to be added at the end of the References Cited section of the Proposal and does not count towards page limits. The "Broadening Participation Strategy and Results" should be a 2 page summary describing recruitment and retention efforts over the 5 years of funding, including the 2 broadening participation results tables for underrepresented groups shown below. These tables should include only those students who received PREM support.

Table 1. Underrepresented Minority (URM) PREM Participants During Award Period

Underrepresented Minority (URM) Participants Per Year					
Category / Year	**2009**	**2010**	**2011**	**2012**	**2013**
Number of Undergraduate Students (% of total participants that are URM)					
Number of Graduate Students (% of total participants that are URM)					
Number of Postdoctoral Fellows (% of total participants that are URM)					
Number of k-12 students (% of total participants that are URM)					
Number of Research Experience for Teachers (% of total participants that are URM) - if applicable					

Table 2. Underrepresented Minority (URM) PREM Graduates During Award Period

Underrepresented Minority Graduates Per Year							Placements for Graduates			
Category	**2009**	**2010**	**2011**	**2012**	**2013**	**TOTAL**	**Industry**	**Graduate School**	**Post-doctoral Fellowship**	**Teaching at University or College**
Number of Undergraduate Students (% of total participants that are URM)										
Number of Graduate										

Students (% of total participants that are URM)										
Number of Postdoctoral Fellows (% of total participants that are URM)										

d. *Research Description*. Provide a concise description of the long-term research and education goals and intellectual focus of the partnership, and describe the planned research and education activities in sufficient detail to enable their scientific merit and significance to be assessed. Describe the role and intellectual contribution of each senior participant in the PREM and briefly outline the resources available or planned to accomplish the research goals. Describe the role of the partner(s). Use **bold-face** type for the **name of each senior investigator** wherever it occurs.
e. *Management Plan*. Describe the plans for administration of the PREM, including the functions of key personnel, and the role of any external advisory committee and internal executive committee. Describe the plans for administering the collaborative programs with the Partner organization. Include an organizational chart.
f. *Evaluation.* Describe how the research and education will be evaluated (internally and/or externally). Include a plan for self-assessment and evaluation.
g. *Broader Impacts.* Describe the potential impact of the project in broadening participation and building a diverse community of materials researchers. Provide specifics on demographics of the organizing institution and department(s) involved. Describe how this award will impact the pipeline of underrepresented groups based on these demographics. Describe the potential impact of the project on science and education. Describe how these results would be disseminated.

2. **Letter of Commitment from Partner(s) (Limitation of 3 pages for this section)**. The PI of each participating DMR-supported center and/or facility must provide a detailed letter of commitment that outlines their intellectual role in the partnership, as well as their commitment, track record and future plans for broadening participation of underrepresented groups in STEM. It must also describe how their center, institute, and/or facility will participate in the PREM. Include the proposed collaborative research and education activities, a plan for student and faculty exchanges, and a plan for the continuation of the partnership in the event that DMR support to the center and/or facility ends before the PREM award does. The letter(s) of commitment should be included in the 'Supplementary Documents' section of the proposal.

3. **Facilities, Equipment and Other Resources.** This section should be prepared in accordance with the GPG, and should provide an aggregated description of the resources that the organization will provide to the project, should it be funded. For purposes of this solicitation, resources such as space, faculty release time, faculty and staff positions, capital equipment, access to existing facilities, collaborations, and support for outreach programs should be addressed, for both the MSI and the partner.

B. Budgetary Information

Cost Sharing:

Inclusion of voluntary committed cost sharing is prohibited.

Other Budgetary Limitations:

The proposed budget can range from $300,000 to $700,000/year for up to a period of 5 years.

PREM grantees will be expected to attend yearly PI meetings. Grantees should anticipate a minimum of at least one site visit held at the lead institution and one reverse site visit held at the discretion of the National Science Foundation during the course of the award. PI meetings and reverse site visits should be accounted for in the travel budget.

C. Due Dates

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

  January 07, 2015

D. FastLane / Grants.gov Requirements

For Proposals Submitted Via FastLane:

To prepare and submit a proposal via FastLane, see detailed technical instructions 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.

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. Comprehensive information about using Grants.gov is available on the Grants.gov Applicant Resources webpage: http://www.grants.gov/web/grants/applicants.html. In addition, the NSF Grants.gov Application Guide (see link in Section V.A) provides instructions regarding the technical 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.

Proposers that submitted via FastLane are strongly encouraged to use FastLane to verify the status of their submission to NSF. For proposers that submitted via Grants.gov, until an application has been received and validated by NSF, the Authorized Organizational Representative may check the status of an application on Grants.gov. After proposers have received an e-mail notification from NSF, Research.gov should be used to check the status of an application.

VI. NSF PROPOSAL PROCESSING AND REVIEW PROCEDURES

Proposals received by NSF are assigned to the appropriate NSF program for acknowledgement and, if they meet NSF requirements, for review. 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 either as *ad hoc* reviewers, panelists, or both, who are experts in the particular fields represented by the proposal. These reviewers are selected by Program Officers charged with 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. In addition, Program Officers may obtain comments from site visits before recommending final action on proposals. Senior NSF staff further review recommendations for awards. A flowchart that depicts the entire NSF proposal and award process (and associated timeline) is included in the GPG as Exhibit III-1.

A comprehensive description of the Foundation's merit review process is available on the NSF website at: http://www.nsf.gov/bfa/dias/policy/merit_review/.

Proposers should also be aware of core strategies that are essential to the fulfillment of NSF's mission, as articulated in *Investing in Science, Engineering, and Education for the Nation's Future: NSF Strategic Plan for 2014-2018*. These strategies are integrated in the program planning and implementation process, of which proposal review is one part. NSF's mission is particularly well-implemented through the integration of research and education and broadening participation in NSF programs, projects, and activities.

One of the strategic objectives in support of NSF's mission is to foster integration of research and education through the programs, projects, and activities it supports at academic and research institutions. These institutions must recruit, train, and prepare a diverse STEM workforce to advance the frontiers of science and participate in the U.S. technology-based economy. NSF's contribution to the national innovation ecosystem is to provide cutting-edge research under the guidance of the Nation's most creative scientists and engineers. NSF also supports development of a strong science, technology, engineering, and mathematics (STEM) workforce by investing in building the knowledge that informs improvements in STEM teaching and learning.

NSF's mission calls for the broadening of opportunities and expanding participation of groups, institutions, and geographic regions that are underrepresented in STEM disciplines, which 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.

A. Merit Review Principles and Criteria

The National Science Foundation strives to invest in a robust and diverse portfolio of projects that creates new knowledge and enables breakthroughs in understanding across all areas of science and engineering research and education. To identify which projects to support, NSF relies on a merit review process that incorporates consideration of both the technical aspects of a proposed project and its potential to contribute more broadly to advancing NSF's mission "to promote the progress of science; to advance the national health, prosperity, and welfare; to secure the national defense; and for other purposes." NSF makes every effort to conduct a fair, competitive, transparent merit review process for the selection of projects.

1. Merit Review Principles

These principles are to be given due diligence by PIs and organizations when preparing proposals and managing projects, by reviewers when reading and evaluating proposals, and by NSF program staff when determining whether or not to recommend proposals for funding and while overseeing awards. Given that NSF is the primary federal agency charged with nurturing and supporting excellence in basic research and education, the following three principles apply:

- All NSF projects should be of the highest quality and have the potential to advance, if not transform, the frontiers of knowledge.
- NSF projects, in the aggregate, should contribute more broadly to achieving societal goals. These "Broader Impacts" may be accomplished through the research itself, through activities that are directly related to specific research projects, or through activities that are supported by, but are complementary to, the project. The project activities may be based on previously established and/or innovative methods and approaches, but in either case must be well justified.
- Meaningful assessment and evaluation of NSF funded projects should be based on appropriate metrics, keeping in mind the likely correlation between the effect of broader impacts and the resources provided to implement projects. If the size of the activity is limited, evaluation of that activity in isolation is not likely to be meaningful. Thus, assessing the effectiveness of these activities may best be done at a higher, more aggregated, level than the individual project.

With respect to the third principle, even if assessment of Broader Impacts outcomes for particular projects is done at an aggregated level, PIs are expected to be accountable for carrying out the activities described in the funded project. Thus, individual projects should include clearly stated goals, specific descriptions of the activities that the PI intends to do, and a plan in place to document the outputs of those activities.

These three merit review principles provide the basis for the merit review criteria, as well as a context within which the users of the criteria can better understand their intent.

2. Merit Review Criteria

All NSF proposals are evaluated through use of the two National Science Board approved merit review criteria. In some instances, however, NSF will employ additional criteria as required to highlight the specific objectives of certain programs and activities.

The two merit review criteria are listed below. **Both** criteria are to be given **full consideration** during the review and decision-making

processes; each criterion is necessary but neither, by itself, is sufficient. Therefore, proposers must fully address both criteria. (GPG Chapter II.C.2.d.i. contains additional information for use by proposers in development of the Project Description section of the proposal.) Reviewers are strongly encouraged to review the criteria, including GPG Chapter II.C.2.d.i., prior to the review of a proposal.

When evaluating NSF proposals, reviewers will be asked to consider what the proposers want to do, why they want to do it, how they plan to do it, how they will know if they succeed, and what benefits could accrue if the project is successful. These issues apply both to the technical aspects of the proposal and the way in which the project may make broader contributions. To that end, reviewers will be asked to evaluate all proposals against two criteria:

- **Intellectual Merit:** The Intellectual Merit criterion encompasses the potential to advance knowledge; and
- **Broader Impacts:** The Broader Impacts criterion encompasses the potential to benefit society and contribute to the achievement of specific, desired societal outcomes.

The following elements should be considered in the review for both criteria:

1. What is the potential for the proposed activity to
    a. Advance knowledge and understanding within its own field or across different fields (Intellectual Merit); and
    b. Benefit society or advance desired societal outcomes (Broader Impacts)?
2. To what extent do the proposed activities suggest and explore creative, original, or potentially transformative concepts?
3. Is the plan for carrying out the proposed activities well-reasoned, well-organized, and based on a sound rationale? Does the plan incorporate a mechanism to assess success?
4. How well qualified is the individual, team, or organization to conduct the proposed activities?
5. Are there adequate resources available to the PI (either at the home organization or through collaborations) to carry out the proposed activities?

Broader impacts may be accomplished through the research itself, through the activities that are directly related to specific research projects, or through activities that are supported by, but are complementary to, the project. NSF values the advancement of scientific knowledge and activities that contribute to achievement of societally relevant outcomes. Such outcomes include, but are not limited to: full participation of women, persons with disabilities, and underrepresented minorities in science, technology, engineering, and mathematics (STEM); improved STEM education and educator development at any level; increased public scientific literacy and public engagement with science and technology; improved well-being of individuals in society; development of a diverse, globally competitive STEM workforce; increased partnerships between academia, industry, and others; improved national security; increased economic competitiveness of the United States; and enhanced infrastructure for research and education.

Proposers are reminded that reviewers will also be asked to review the Data Management Plan and the Postdoctoral Researcher Mentoring Plan, as appropriate.

Additional Solicitation Specific Review Criteria

The PREM proposals will also be evaluated on the following:

- Are the goals of the partnership clearly defined and achievable?
- Is the role of the DMR-supported center and/or facility partner clearly stated? Does the collaboration between the PREM and the DMR-supported partner have a strong intellectual connection?
- Are any additional partners specified and are their roles clearly stated and compelling?
- Are the plans for student and faculty exchanges clearly defined and achievable? What is the added value of the partnership to all institutions involved?
- Is the proposed research well-aligned to the research mission of DMR?
- To what extent will this partnership lead to building a diverse workforce in materials research at all levels, from undergraduates to faculty?
- Is the management plan sound? Does the organization chart contain the appropriate participants?
- Are the recruitment and retention plans appropriate for the institutional setting?
- Is the plan for internal and/or external assessment of the impact, dissemination of results, and progress of the project reasonable?

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 evaluate proposals using two National Science Board approved merit review criteria and, if applicable, additional program specific criteria. A summary rating and accompanying narrative will generally be completed and submitted by each reviewer and/or panel. 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 strives to be able to tell applicants whether their proposals have been declined or recommended for funding within six months. Large or particularly complex proposals or proposals from new awardees may require additional review and processing time. The time interval begins on the deadline or target date, or receipt date, whichever is later. The interval ends when the Division Director acts upon the Program Officer's recommendation.

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. After an administrative review has occurred, Grants and Agreements Officers perform 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.

Once an award or declination decision has been made, Principal Investigators are provided feedback about their proposals. In all cases, reviews are treated as confidential documents. Verbatim copies of reviews, excluding the names of the reviewers or any reviewer-identifying information, 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.

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 notice, 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 notice; (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 notice. 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 no later than 90 days prior to the end of the current budget period. (Some programs or awards require submission of more frequent project reports). No later than 120 days following 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 project reports, or the project outcomes report, will delay NSF review and processing of any future funding increments as well as any pending proposals for all identified PIs and co-PIs on a given award. 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 Research.gov, for preparation and submission of annual and final project reports. Such reports provide information on accomplishments, project participants (individual and organizational), publications, and other specific products and impacts of the project. Submission of the report via Research.gov constitutes certification by the PI that the contents of the report are accurate and complete. The project outcomes report also 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.

More comprehensive information on NSF Reporting Requirements 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.

PREM-specific reporting guidelines will be provided by the cognizant Program Officers.

Grantees are expected to participate in program-wide assessment and evaluation activities which may include submitting additional information throughout the award period.

VIII. AGENCY CONTACTS

Please note that the program contact information is current at the time of publishing. See program website for any updates to the points of contact.

General inquiries regarding this program should be made to:

- Alfredo Caro, 1065 N, telephone: (703) 292-4914, email: jcaro@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.

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, "NSF Update" is an information-delivery system 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 Grants Conferences. Subscribers are informed through e-mail or the user's Web browser each time new publications are issued that match their identified interests. "NSF Update" also is available on NSF's website.

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

Information about current PREM awards and activities can be found on http://prem-mrsec.org/.

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 55,000 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 Arctic 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

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:

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Reports Clearance Officer
Office of the General Counsel
National Science Foundation
Arlington, VA 22230