

# MATERIALS RESEARCH SCIENCE AND ENGINEERING CENTERS

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*Program Solicitation*

***NSF 99-125***

DIRECTORATE FOR MATHEMATICAL  
AND PHYSICAL SCIENCES  
DIVISION OF MATERIALS RESEARCH

***DEADLINE: PRE-PROPOSALS: SEPTEMBER 10, 1999***  
***DEADLINE: FULL PROPOSAL: JANUARY 21, 2000***



NATIONAL SCIENCE FOUNDATION

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# SUMMARY OF PROGRAM REQUIREMENTS

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## GENERAL INFORMATION

**Program Name:** Materials Research Science and Engineering Centers (MRSECs)

**Short Description/Synopsis of Program:** The MRSEC program supports interdisciplinary university based group research and educational activities in the area of materials science and engineering, condensed matter physics, solid state and materials chemistry, and related areas of science and engineering. Any MRSEC encompasses one or more interdisciplinary research groups (IRGs). The IRGs involve several faculty and associated researchers with complementary background and expertise and address an area of research, which requires interactive efforts among the participants.

**Cognizant Program Officer(s):** Dr. Carmen Huber, Program Director, Room 1065, Division of Materials Research, telephone (703) 306-1996, e-mail: [chuber@nsf.gov](mailto:chuber@nsf.gov); Dr. Ulrich Strom, Program Director, Room 1065, telephone (703) 306-1832, e-mail: [ustrom@nsf.gov](mailto:ustrom@nsf.gov).

**Applicable Catalog of Federal Domestic Assistance (CFDA) No.: 47.049**

## ELIGIBILITY

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

**Proposals may be submitted by universities in support of center type activities**

- ◆ PI eligibility limitations: **None**

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

**Only two pre-proposals may be submitted by any one institution. Any one individual may be the Principal Investigator for only one pre-proposal. The same limitations apply to full proposals.**

## AWARD INFORMATION

- ◆ Type of award anticipated: **Cooperative Agreement**
- ◆ Number of awards anticipated in FY 2000: **10-15 awards**
- ◆ Amount of funds available: **Approximately \$22 million will be available for this initiative in FY 2000**
- ◆ Anticipated date of award: **September 2000**

## PROPOSAL PREPARATION & SUBMISSION INSTRUCTIONS

- ◆ **Proposal Preparation Instructions**
  - Letter of Intent requirements: **None**
  - Pre-proposal requirements: **Yes**
  - Proposal preparation instructions: **Standard NSF Grant Proposal Guide and special instructions**

- Supplemental proposal preparation instructions: **None**
- Deviations from standard (GPG) proposal preparation instructions: **No, except that there are additional instructions**

◆ **Budgetary Information**

- Cost sharing/matching requirements:

**Cost sharing of at least 10% of the total (five year) budget is required and must be shown on line M of the proposal budget (NSF Form 1030.)**

- Indirect cost (F&A) limitations: **In accordance with Federal Negotiated Rate.**
- Other budgetary limitations:

**Awards are expected to range in size between \$0.5 million/year and \$5.0 million/year. The budget for the full proposal may not be larger than the pre-proposal budget.**

◆ **FastLane Requirements**

- FastLane proposal preparation requirements: **FastLane use required**
- FastLane point of contact: **Florence I. Rabanal, e-mail: [dmrfl@nsf.gov](mailto:dmrfl@nsf.gov) ;**  
**or Maxine E. Jefferson, e-mail: [dmrfl@nsf.gov](mailto:dmrfl@nsf.gov).**

◆ **Deadline/Target Dates**

- Pre-Proposal Deadline **5:00 PM, local time, September 10, 1999 (FastLane)**
- Full Proposal Deadline **5:00 PM local time, January 21, 2000 (FastLane)**

## **PROPOSAL REVIEW INFORMATION**

- ◆ Merit Review Criteria: **Standard National Science Board approved criteria**

## **AWARD ADMINISTRATION INFORMATION**

- ◆ Grant Award Conditions: **GC-1 and CA-1**
- ◆ Special conditions anticipated: **Stated within cooperative agreement**
- ◆ Special reporting requirements anticipated: **Annual progress report and continuation request**

## INTRODUCTION

Materials Research Science and Engineering Centers (MRSECs) support interdisciplinary and multidisciplinary materials research and education of the highest quality while addressing fundamental problems in science and engineering that are important to society. MRSECs require outstanding research quality, intellectual breadth, interdisciplinarity, flexibility in responding to new research opportunities, and support for research infrastructure, and they foster the integration of research and education in the materials field. They are expected to have strong links to industry and other sectors, and to develop a national network of university-based centers in materials research. MRSECs address fundamental materials research topics of intellectual and technological importance, contribute to national priorities by fostering active collaboration between academia and other sectors, and enable researchers to address problems of a scope and complexity requiring the advantages of scale and interdisciplinarity provided by a campus-based research center.

The MRSEC program reinforces NSF's commitment to excellence in interdisciplinary research and education; it is national in scope and significance, requiring coordination of the overall effort among Centers; and it complements, but does not substitute for, NSF support for individual investigators, small groups, national user facilities, and instrumentation in materials research.

## PROGRAM DESCRIPTION

MRSECs are supported by NSF to undertake materials research of a scope and complexity that would not be feasible under traditional funding of individual research projects. NSF support is intended to reinforce the base of individual investigator and small group research by providing the flexibility to address topics requiring an approach of broad scope and duration. MRSECs are university-based, and undertake an interactive, interdisciplinary approach to materials research and education while fostering active cooperation among university-based researchers and those concerned with the application of materials research in industry and elsewhere. An MRSEC may encompass one or more interdisciplinary research groups (IRGs). Each IRG involves several faculty members and associated researchers, addressing a major topic or area in which sustained support for interactive effort by several participants with complementary backgrounds, skills, and knowledge is critical to progress. The IRGs in a Center may be topically related, or they may address different topical aspects of materials research; they contribute to the synergy arising from the intellectual and educational activities of the Center and its common infrastructure, shared facilities and outreach programs. Thus, the Center as a whole is expected to be more than the sum of its parts.

The scope of activities of each MRSEC depends on the capabilities of the proposing institution. Smaller Centers normally consist of a single IRG addressing a particular topic in materials research, involving collaboration with industry or other sectors. Larger Centers undertake a broader program of research and education, and may involve several IRGs. MRSECs incorporate most or all of the following activities to an extent consistent with the size of the Center:

- Programs to stimulate interdisciplinary education and the development of human resources (including support for underrepresented groups) through cooperation and collaboration with other institutions and sectors, as well as within the host institution. Cooperative programs involving minority and non-minority institutions are strongly encouraged.
- Active cooperation with industry, to stimulate and facilitate knowledge transfer among the participants and strengthen the links between university-based research and its application; cooperation and collaboration with other academic institutions and other sectors, including international collaboration. Cooperative activities may include, but are not limited to: joint research programs; affiliate programs; joint development and use of shared experimental facilities; access to user facilities; visiting scientist programs; joint educational ventures; joint seminar series, colloquia, or workshops; stimulation of new business ventures; involvement of external advisory groups; and industrial outreach programs.
- Support for shared experimental facilities, properly staffed, equipped and maintained, and accessible to users from the Center, the participating institutions, and other institutions and sectors.

Each MRSEC has the responsibility to manage and evaluate its own operation with respect to program administration, planning, content and direction. NSF support is intended to promote optimal use of university resources and capabilities, and to provide maximum flexibility in setting research directions, developing cooperative activities with other institutions and sectors, and responding quickly and effectively to new opportunities in materials research and education that are important to the nation's research and technology base. NSF encourages MRSECs to include support for junior faculty, high-risk projects, and emerging areas of interdisciplinary materials research.

The MRSECs constitute a spectrum of coordinated Centers of differing scientific breadth and administrative complexity which may address any area of materials research. The smaller Centers enable specialized areas of interdisciplinary excellence to be integrated into a national network of larger MRSECs. These in turn provide, in addition to research excellence, the infrastructure of equipment, education and outreach needed to ensure that the program as a whole meets its objectives and provides for effective coordination with industrial efforts. The MRSEC program will not normally provide support simultaneously for more than one Center based at any one institution.

MRSEC Directors serve on a national liaison team for the program. The team is responsible for developing a liaison structure with the active participation of each Center, contributing to a network of centers addressing common problems and opportunities, and facilitating links and cooperation among Centers as well as between Centers and other institutions.

## **ELIGIBILITY**

Academic institutions in the USA with broad research and education programs in the area of condensed matter physics, solid state and materials chemistry, materials science and engineering, and related areas of science and engineering may submit *pre-proposals*.

In order to reduce the burden of proposal writing for the materials research community and the burden of subsequent proposal review and evaluation for reviewers and NSF staff, NSF will accept *full proposals* for MRSECs *by invitation only*, based on the results of the pre-proposal evaluation.

While more than one institution may participate in a single proposal or pre-proposal, one institution must accept overall management responsibility for the Center. A single institution may not be the lead institution in more than two pre-proposals.

## **AWARD INFORMATION**

Individual MRSEC awards are expected to range in size from about \$0.5 million to about \$5 million per year. Awards will be made for five years. The number of awards will depend on the availability of funds and the quality of proposals received. Proposals from existing (re-competing) Centers will be evaluated in open competition with new proposals. If a proposal from an existing Center is not successful, phase out support may be provided at a reduced level for a period of up to two years after the expiration of the current award. Awards are based on comprehensive, competitive merit review. Re-competing Centers must demonstrate excellence, significant achievements, and institutional and national impact in materials research; substantive accomplishments in the integration of research and education; active and effective collaboration with industry and other sectors as appropriate and effective development and operation of shared facilities. Achievements under prior NSF support are a critical factor when re-competing proposals are considered. The commitment of each Center to introducing substantially new research topics and undertaking innovative research will also be important in considering re-competing proposals. Anticipated date of awards: September 2000.

## **PROPOSAL PREPARATION & SUBMISSION INSTRUCTIONS**

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

Proposals submitted in response to this program announcement should be prepared and submitted in accordance with the general guidelines contained in the *Grant Proposal Guide* (GPG), NSF 99-2. The complete text of the GPG (including electronic forms) is available electronically on the NSF Web site at: <http://www.nsf.gov/>. Paper

copies of the GPG may be obtained from the NSF Publications Clearinghouse, telephone (301) 947-2722 or by e-mail from [pubs@nsf.gov](mailto:pubs@nsf.gov).

Proposers are reminded to identify the program announcement number (NSF 99-125) in the program announcement/solicitation block on the NSF Form 1207, “*Cover Sheet for Proposal to the National Science Foundation*” and to select “Materials Rsch Sci and Eng Cent.” from the Fastlane org. unit pull-down list. Compliance with this requirement is critical to determining the relevant proposal processing guidelines. Failure to submit this information may delay processing.

### ***Pre-proposal***

The pre-proposal must be submitted via NSF FastLane. The pre-proposal must be single-spaced in 12-point type, and consist of

- (1) the NSF coversheet (showing the name of the proposed MRSEC director (principal investigator), the pre-proposal title and the names of the principal participating institutions. It is not necessary to send in page two of NSF Form 1207 for pre-proposals;
- (2) a narrative (see below); enter in “project description” FastLane form;
- (3) a list of participating senior investigators (faculty level and equivalent) by name, institutional affiliation, and departmental affiliation (additional biographical information is *not* required in the pre-proposal); include this at the end of the narrative along with a title that clearly identifies the section and enter in the “project description” FastLane form;
- (4) a one-page synopsis of institutional and other commitments to the proposed Center; include this at the end of the narrative along with a title that clearly identifies the section and enter in the “project description” FastLane form;
- (5) budget pages (see Budgetary Information below), and a one-page budget justification;
- (6) a Summary table of requested NSF support (see Budgetary Information below); include this at the end of the narrative along with a title that clearly identifies the section and enter in the “project description” FastLane form.

Concurrently with submission of the pre-proposal please submit by e-mail to [mrsec@nsf.gov](mailto:mrsec@nsf.gov) the following: (1) The title of the pre-proposal, the submitting institution(s), and the name of the PI(s); (2) a list of individuals (and their affiliations) *outside* the participating institutions whose participation in the review of the pre-proposal might constitute a conflict of interest through association with the participants; (3) a list of individuals who might be suitable to act as impartial reviewers.

In the narrative (item 2 above), provide the following:

- a brief overview of the Center as a whole, including a concise rationale for establishing the Center, and an outline of the existing and planned capabilities of the participating institutions in materials research and education. **Limit: 1 page.**
- a description of pertinent achievements under prior NSF support, where applicable. **Limit: 2 pages.**
- a description of each proposed area of multi-investigator, interdisciplinary group research, including names of faculty-level participants and numbers of students and postdoctoral associates in each group (**limit this section to no more than two pages for each IRG**)
- a description of proposed activities in education, human resource development, and outreach; proposed collaborations with industry and/or other sectors; shared experimental facilities; international collaboration; and an outline of the proposed arrangements for administration and management of the Center. **Limit: 3 pages**

**Limit the narrative section as a whole to no more than eleven pages total, including tables, illustrations, and references, regardless of the number of IRGs.**

### ***Full Proposal***

A full proposal may be submitted only by invitation. All full proposals must be submitted via NSF FastLane. The proposal must be single spaced in 12-point type and must contain the following items in the order indicated.

**Proposals that exceed the page limitations will be ineligible for consideration and will be returned without review.** Items 2 through 15 described below should be entered in the “project description” FastLane form, **with the exception of Item Number 4, which should be entered on the “Add/Modify Non CO-PI Senior Personnel” Form.**

1. The two-page NSF Cover Sheet. Indicate the total amount requested for the five years of NSF support in the box entitled "requested amount."
2. Table of Contents. Will generated automatically by FastLane.
3. Executive Summary. Provide a clear rationale for and description of the proposed MRSEC and its potential impact. Briefly describe the institutional setting of the Center, its proposed scope and organization, activities in research and education and their integration, development of human resources, shared experimental facilities, collaborative activities with industry and other sectors, links with related major research centers on or off campus, and management plan. **Limit: 3 pages.**
4. List of Participants. List each senior investigator (faculty level or equivalent), by full name, and his or her institutional and departmental affiliation; enter in “Add/Modify Non CO-PI Senior Personnel” FastLane form.
5. Achievements Under Prior NSF Support. Describe achievements under prior NSF support that pertain to the present proposal. (Recompeting proposals should also list publications and patents from prior NSF support under Appendix C, below). **Limit: 5 pages.**
6. Interdisciplinary Research Groups (IRGs). The Center may encompass one or more IRGs. For each IRG proposed, provide a concise description of the long-term research goals and intellectual focus, and describe the planned research 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 IRG, and briefly outline the resources available or planned to accomplish the research goals (it will be helpful to underline the name of each senior investigator wherever it occurs). **The need for an interactive, interdisciplinary approach involving several investigators, and the means of achieving this, should be clearly established.** Place the IRG in the context of the Center as a whole, and describe interactions with other groups and institutions. At the beginning of each IRG section in the proposal, name the senior personnel who will participate, and state the proposed number of postdoctoral and graduate student participants. **Limit for each IRG: 10 pages, including references.**
7. Education, Human Resources, and Outreach. Describe the proposed activities of the Center in education and human resource development, including plans for participation by undergraduates, pre-college students and teachers if appropriate, and members of underrepresented groups. Outline plans for seminar series, colloquia, workshops, conferences, summer schools and related activities, as appropriate. Describe any additional outreach programs not included in other sections of the proposal. **Limit: 3 pages.**
8. Shared Experimental Facilities. Describe the shared experimental facilities to be established, including specific major instrumentation, and plans for the development of instrumentation. Describe plans for maintaining and operating the facilities, including staffing, provision for user fees, and plans for ensuring access to outside users. Distinguish clearly between *existing* facilities and those still to be developed. **Limit: 3 pages.**



9. Collaboration with Industry and Other Sectors. Describe the proposed interactions and collaborations with industry, and, where appropriate, with other institutions and sectors, including national laboratories. Define the goals of the collaboration, and describe the planned activities. Describe the roles of the senior participants, the mechanisms planned to stimulate and facilitate knowledge transfer, and the potential long-term impact of the collaborations. **Limit: 3 pages.**
10. International Collaboration (complete this section if appropriate). Describe the nature of the collaboration and the expected international and scientific or engineering benefits to the research and education program. Include a description of the research facilities at the foreign site, as appropriate, and of the division of effort and expertise among the collaborators. **Limit: 1 page.**
11. Seed Funding and Emerging Areas. *Through this mechanism, NSF intends to provide flexibility for the Center to respond quickly and effectively to new opportunities.* Briefly describe other proposed research plans and related activities, showing clearly how they are related to the mission of the Center. These may include (but are not limited to): seed support for junior faculty and for investigators changing fields; high-risk research projects; emerging areas of interdisciplinary research; experimental programs to link the university effort in materials with industry and other sectors; the development of tools for remote access to instrumentation; and innovative interdisciplinary educational ventures. **Seed funding through the Center is not intended to provide a substitute for NSF individual investigator funding; the criteria and mechanisms for selecting and evaluating projects must be clearly addressed in the management plan.** Include the names of key personnel for the first year. **Limit: 3 pages.**
12. Management. Describe the plans for administration of the Center, including the functions of key personnel and the role of any advisory committee, executive committee, and/or program committee or their equivalent. Describe the procedures and criteria used to select, administer, and evaluate the Interdisciplinary Research Groups and other research programs of the Center, including seed funding and collaborative programs with other groups and institutions. Plans for administering the shared experimental facilities should be described under item 8. Describe plans for administering the educational programs and outreach activities of the Center, as appropriate. **Limit: 3 pages.**
13. Institutional and Other Sector Support. Outline institutional and other commitments to the Center, including matching funds, space, faculty and staff positions, capital equipment, access to existing facilities, commitments for collaboration and outreach programs, and other commitments. **Limit: 1 page.**
14. Publications and Patents under Prior NSF Support. For re-competing proposals only, list publications and patents under prior NSF MRSEC support.
15. Letters of Support. Include only official letters of support verifying specific commitments of resources from participating institutions. Note: scan your signed letters, but do not send originals.

### **Additional Information**

#### **A: Biographical Information.**

Include a biographical sketch for each senior participant, listing up to ten publications most pertinent to this proposal. **Limit, 1 page for each senior investigator.** Enter in “Biographical Sketch” Fastlane form.

#### **B: Current and Pending Support.**

List current and pending support for each senior investigator. Enter in “Current and Pending Support” FastLane form.

#### **C: Reviewer Information**

Enter the following information into the FastLane “List of Suggested Reviewers” form: (1) a list of individuals (and their affiliations) *outside* the participating institutions whose participation in the review of the full proposal might constitute a conflict of interest through association with the participants; and (2) a list of individuals who might be suitable to act as impartial reviewers. Concurrently, with the above submission send an e-mail to [mrsec@nsf.gov](mailto:mrsec@nsf.gov) with the above information; include the title of the full proposal, the submitting institution(s) and the name of the PI(s).

**B. Budgetary Information (Pre-proposals and Full Proposals)**

**Cost Sharing Requirements.**

Cost sharing of at least 10% of the total (five year) budget is required and must be shown on line M of the proposal budget.

The amount of cost sharing must be shown in the proposal in enough detail to allow NSF to determine its impact on the proposed project. Documentation of availability of cost sharing must be included in the proposal. The narrative associated with cost sharing should be included in the “Budget Justification” form which is included as a part of the Budget Form.

Only items which would be allowable under the applicable cost principles, if charged to the project, may be included as the grantee’s contribution to cost sharing. Contributions may be made from any non-Federal source, including non-Federal grants or contracts, and may be cash or in-kind (see OMB Circular A-110, Section 23). It should be noted that contributions counted as cost-sharing toward projects of another Federal agency may not be counted towards meeting the specific cost-sharing requirements of the NSF grant.

All cost-sharing amounts are subject to audit. Failure to provide the level of cost-sharing reflected in the approved grant budget may result in termination of the NSF grant, disallowance of grant costs and/or refund of grant funds to NSF.

**Budgets.**

Complete budget pages for each year of support (1 – 5) and a five-year summary budget justification. A five-year budget summary will be automatically generated by FastLane. Provide separate budget pages for the Center as a whole and for each participating institution.

Also, *in tabular form as follows*, summarize the overall support levels planned for each of the major activities of the MRSEC as a whole (Note: The Table below is to be entered in the “project description” FastLane form.)

<b><i>SUMMARY TABLE OF REQUESTED NSF SUPPORT</i></b>		
<b>ACTIVITY</b>	<b>YEAR 1</b>	<b>5 YEAR TOTAL</b>
IRG 1(Title)		
IRG 2 (Title) (repeat for each IRG)		
Shared Experimental Facilities		
Seed Funding and Emerging Areas		
Education and Human Resources		
Outreach		
Administration		
<b>TOTAL</b>		

For each entry in the Table, include indirect costs. Column totals must equal the total budget requested from NSF for the period shown. Include major capital equipment under shared experimental facilities. Support for graduate students should normally be included under research, not under education and human resources.

**C. Proposal Due Dates.**

Pre-proposals **MUST** be submitted electronically by 5:00 PM, local time, September 10, 1999. Principal Investigators will be notified of the results of pre-proposal review on or about November 12, 1999.

Full proposals **MUST** be submitted electronically by 5:00 PM, local time, January 21, 2000.

Copies of the signed proposal cover sheet must be submitted in accordance with the instructions identified below.

*Submission of Signed Cover Sheets.* For full proposals submitted electronically via FastLane, the signed proposal Cover Sheet (NSF Form 1207) should be forwarded to the following address and received by NSF no later than 5:00 PM on January 28, 2000:

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

A full proposal may not be processed until the complete proposal (including signed Cover Sheet) has been received by NSF.

#### **D. FastLane Requirements.**

The NSF FastLane system is available for electronic preparation and submission of a proposal through the Web at the FastLane Web site at <http://www.fastlane.nsf.gov>. The Sponsored Research Office (SRO or equivalent) must provide a FastLane Personal Identification Number (PIN) to each Principal Investigator (PI) to gain access to the FastLane "Proposal Preparation" application. PIs that have not submitted a proposal to NSF in the past must contact their SRO to be added to the NSF PI database. This should be done as soon as the decision to prepare a proposal is made.

In order to use NSF FastLane to prepare and submit a proposal, the following are required:

Browser (must support multiple buttons and file upload)

- Netscape 3.0 or greater
- Microsoft Internet Explorer 4.0 or greater

PDF Reader (needed to view/print forms)

- Adobe Reader 3.0 or greater

PDF Generator (needed to create project description)

- Adobe Acrobat 3.01 or greater
- Aladdin Ghostscript 5.10 or greater

A list of registered institutions and the FastLane registration form are located on the FastLane Web page.

## **PROPOSAL REVIEW INFORMATION**

### **A. Merit Review Criteria**

Reviews of proposals submitted to NSF are solicited from peers with expertise in the substantive area of the proposed research or education project. These reviewers are selected by Program officers charged with the oversight of the review process. NSF invites the proposer to suggest, at the time of submission, the names of appropriate or inappropriate reviewers. Care is taken to ensure that reviewers have no conflicts with the proposer. Special efforts are made to recruit reviewers from non-academic institutions, minority serving institutions, adjacent disciplines to that principally addressed in the proposal, etc.

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

### **What is the intellectual merit of the proposed activity?**

How important is the proposed activity to advancing knowledge and understanding within its own field or across different fields? How well qualified is the proposer (individual or team) to conduct the project? (If appropriate, the reviewer will comment on the quality of prior work.) To what extent does the proposed activity suggest and explore creative and original concepts? How well conceived and organized is the proposed activity? Is there sufficient access to resources?

### **What are the broader impacts of the proposed activity?**

How well does the activity advance discovery and understanding while promoting teaching, training, and learning? How well does the proposed activity broaden the participation of underrepresented groups (e.g., gender, ethnicity, disability, geographic, etc.)? To what extent will it enhance the infrastructure for research and education, such as facilities, instrumentation, networks, and partnerships? Will the results be disseminated broadly to enhance scientific and technological understanding? What may be the benefits of the proposed activity to society?

### **Integration of Research and Education**

One of the principal strategies in support of NSF's goals is to foster integration of research and education through the programs, projects and activities it supports at academic and research institutions. These institutions provide abundant opportunities where individuals may concurrently assume responsibilities as researchers, educators, and students and where all can engage in joint efforts that infuse education with the excitement of discovery and enrich research through the diversity of learner perspectives. PIs should address this issue in their proposal to provide reviewers with the information necessary to respond fully to both NSF merit review criteria. NSF staff will give it careful consideration in making funding decisions.

### **Integrating Diversity into NSF Programs, Projects, and Activities**

Broadening opportunities and enabling the participation of all citizens -- women and men, underrepresented minorities, and persons with disabilities -- are essential to the health and vitality of science and engineering. NSF is committed to this principle of diversity and deems it central to the programs, projects, and activities it considers and supports. PIs should address this issue in their proposal to provide reviewers with the information necessary to respond fully to both NSF merit review criteria. NSF staff will give it careful consideration in making funding decisions.

**In addition to these generic review criteria, reviewers will be asked to use the following criteria. Pre-proposals will be evaluated in terms of their potential to meet the criteria for full proposals. Achievements under prior NSF support will be critically assessed when re-competing proposals are evaluated.**

MRSEC proposals will be evaluated in terms of the interdisciplinary research group(s) and of the Center as a whole. Support will be determined by merit according to the criteria given below. Given competing proposals of essentially equal merit, NSF staff will be responsible for ensuring that the overall program reflects an appropriate balance among research topics and among Centers of differing size and complexity.

#### **A: *Interdisciplinary Research Groups:***

- Intrinsic merit of the research. Overall quality of the proposed research, and likelihood that the research will lead to fundamental advances, new discoveries, and/or technological developments.
- Competence to perform the research. Capability of the investigators, technical soundness of the proposed approach, and adequacy of the resources available or proposed, including instrumentation and facilities.
- Interdisciplinarity and degree of interconnection within each IRG. Benefits of a multi-investigator, interdisciplinary approach; cooperation and interdependence of the investigators.

## **B: *The Center as a Whole:***

- Institutional setting and rationale for the Center. Relationship to existing and planned institutional programs and capabilities in materials research and education; intellectual breadth of the proposed program; potential for stimulating interdisciplinary interaction and collaboration. Potential for institutional, national and international impact.
- Achievements under prior NSF support, where applicable.
- Plans and potential to develop and maintain active collaboration with industry and other sectors; to stimulate and facilitate knowledge transfer among the institutional participants and between the Center and other institutions and sectors; and to strengthen the links between university-based materials research and its application and implementation. Outreach to other institutions and sectors, including international collaboration and cooperation.
- Plans to establish, operate, and maintain shared experimental facilities and to provide appropriate access to users from the home institution, other academic institutions, industry, and other sectors.
- Potential effect on the infrastructure of science and engineering, particularly in fostering a broadly interdisciplinary, interactive approach to materials research and education, developing effective educational outreach programs, fostering a climate of interaction and effective knowledge transfer between the university and its partners in industry and other sectors (see above), effective use of seed funding, and fostering increased participation in materials research and education on the part of women and members of underrepresented groups.
- Institutional and other support, management plan, and budget. Institutional and other commitments to the Center. Likely effectiveness of the proposed management plan, including mechanisms for selection of topics and internal allocation of resources, plans for self-evaluation, and plans and potential for maintaining a flexible and innovative program. Appropriateness of the requested budget.

## **B. Merit Review Process**

Most of the proposals submitted to NSF are reviewed by mail review, panel review, or some combination of mail and panel review.

*Pre-proposals* will be evaluated by mail and/or panel review.

*Full Proposals* will be evaluated in several stages of merit review, which includes mail review, reverse site visit (presentation at NSF), panel review, and review by NSF and by the National Science Board. A proposal may be declined at any point in the review process.

Reviewers of pre-proposals will be asked to formulate a recommendation to either invite or not invite a full proposal. The MRSEC program directors will consider the advice of reviewers and will formulate a recommendation. Principal investigators will be notified of the results of the pre-proposal review on or about November 12, 1999.

Full proposals are carefully reviewed by a number of reviewers outside NSF who are experts in the particular field represented by the proposal. The number of reviewers selected is commensurate with the complexity of the proposal. The MRSEC program directors will consider the advice of reviewers and will formulate a recommendation. Principal investigators will be notified of the results of the full proposal review on or about August 30, 2000.

In all cases, after final programmatic approval has been obtained, award recommendations are then forwarded to the Division of Grants and Agreements for review of business, financial and policy implications and the processing and issuance of a grant or other agreement. Proposers are cautioned that only a Grants Officer may make commitments, obligations or awards on behalf of NSF or authorize the expenditure of funds. No commitment on

the part of NSF should be inferred from technical or budgetary discussions with an NSF program officer. A Principal Investigator or organization that makes financial or personnel commitments in the absence of a grant or cooperative agreement signed by the NSF Grants Officer does so at its own risk.

## **AWARD ADMINISTRATION INFORMATION**

### **A. Notification of the Award.**

Notification of the award is made *to the submitting organization* by a Grants Officer in the Division of Grants and Agreements (DGA). Organizations whose proposals are declined will be advised as promptly as possible by the cognizant NSF Program Division administering the program. Verbatim copies of reviews, not including the identity of the reviewer, will be provided automatically to the Principal Investigator.

### **B. Grant Award Conditions.**

An NSF grant consists of: (1) the award letter, which includes any special provisions applicable to the grant and any numbered amendments thereto; (2) the budget, which indicates the amounts, by categories of expense, on which NSF has based its support (or otherwise communicates any specific approvals or disapprovals of proposed expenditures); (3) the proposal referenced in the award letter; (4) the applicable grant conditions, such as Grant General Conditions (NSF GC-1)\* or Federal Demonstration Partnership Phase III (FDP) Terms and Conditions\* and (5) a copy of the MRSEC program solicitation. Electronic mail notification is the preferred way to transmit NSF grants to organizations that have electronic mail capabilities and have requested such notification from the Division of Grants and Agreements.

- These documents may be accessed electronically on NSF's Web site at: <http://www.nsf.gov/>. Paper copies may be obtained from the NSF Publications Clearinghouse, telephone (301) 947-2722 or by e-mail from [pubs@nsf.gov](mailto:pubs@nsf.gov).

Cooperative agreement awards are also administered in accordance with NSF Cooperative Agreement Terms and Conditions (CA-1).

More comprehensive information on NSF Award Conditions is contained in the NSF *Grant Policy Manual* (GPM) Chapter II, (NSF 95-26) available electronically on the NSF Web site. The GPM also is available in paper copy by subscription from the Superintendent of Documents, Government Printing Office, Washington, DC 20402. The GPM may be ordered through the GPO Web site at: <http://www.gpo.gov>.

### **C. Reporting Requirements.**

For all multi-year grants (including both standard and continuing grants), the PI must submit an annual project report to the cognizant Program Officer at least 90 days before the end of the current budget period.

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

NSF has implemented a new electronic project reporting system, available through FastLane, which permits electronic submission and updating of project reports, including information on: project participants (individual and organizational); activities and findings; publications; and, other specific products and contributions. Reports will continue to be required annually and after the expiration of the grant, but PIs will not need to re-enter information previously provided, either with the proposal or in earlier updates using the electronic system.

Effective October 1, 1998, PIs are required to use the new reporting format for annual and final project reports. PIs are strongly encouraged to submit reports electronically via FastLane. For those PIs who cannot access FastLane, paper copies of the new report formats may be obtained from the NSF Clearinghouse as specified above. NSF expects to require electronic submission of all annual and final project reports via FastLane beginning in October, 1999.

#### **D. New Awardee Information.**

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

#### **CONTACTS FOR ADDITIONAL INFORMATION**

Inquiries about the NSF Materials Research Science and Engineering Centers Program should be directed to one of the MRSEC Program Directors: Dr. Carmen Huber, (703) 306-1996, [chuber@nsf.gov](mailto:chuber@nsf.gov); Dr. Ulrich Strom, (703) 306-1832, [ustrom@nsf.gov](mailto:ustrom@nsf.gov). Address: Materials Research Science and Engineering Centers, Division of Materials Research, Room 1065, National Science Foundation, Arlington, VA 22230; FAX: (703) 306-0515.

Information about MRSECs, including current awards, can be found on the NSF MRSEC WEB site at <http://www.nsf.gov/mps/dmr/mrsec.htm>

For questions related to use of FastLane contact **Florence I. Rabanal**, e-mail: [dmrfl@nsf.gov](mailto:dmrfl@nsf.gov) ; or **Maxine E. Jefferson**, e-mail: [mailto:dmrfl@nsf.gov](mailto:mailto:dmrfl@nsf.gov).

#### **OTHER PROGRAMS OF INTEREST**

The NSF Guide to Programs is a compilation of funding opportunities for research and education in science, mathematics, and engineering. General descriptions of NSF programs, research areas, and eligibility information for proposal submission are provided in each chapter. Beginning in fiscal year 1999, the NSF Guide to Programs only will be available electronically, at <http://www.nsf.gov/cgi-bin/getpub?gp>. Many NSF programs offer announcements concerning specific proposal requirements. To obtain additional information about these requirements, contact the appropriate NSF program offices listed in Appendix A of the GPG.

Any changes in NSF's fiscal year programs occurring after press time for the Guide to Programs will be announced in the NSF E-Bulletin, available electronically on the NSF Web site at: <http://www.nsf.gov/home/ebulletin/>. The direct URL for recent issues of the Bulletin is <http://www.nsf.gov/home/ebulletin/>. Subscribers can also sign up for NSF's Custom News Service to find out what funding opportunities are available.

## **ABOUT THE NATIONAL SCIENCE FOUNDATION**

The National Science Foundation (NSF) funds research and education in most fields of science and engineering. Grantees are wholly responsible for conducting their project activities and preparing the results for publication. Thus, the Foundation does not assume responsibility for such findings or their interpretation.

NSF welcomes proposals from all qualified scientists, engineers and educators. The Foundation strongly encourages women, minorities, and persons with disabilities to compete fully in its programs. In accordance with federal statutes, regulations, and NSF policies, no person on grounds of race, color, age, sex, national origin, or disability shall be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving financial assistance from NSF (unless otherwise specified in the eligibility requirements for a particular program).

Facilitation Awards for Scientists and Engineers with Disabilities (FASED) provide funding for special assistance or equipment to enable persons with disabilities (investigators and other staff, including student research assistants) to work on NSF-supported projects. See the program announcement or contact the program coordinator at (703) 306-1636.

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

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

The information requested on proposal forms and project reports is solicited under the authority of the National Science Foundation Act of 1950, as amended. The information on proposal forms will be used in connection with the selection of qualified proposals; project reports submitted by awardees will be used for program evaluation and reporting within the Executive Branch and to Congress. The information requested may be disclosed to qualified reviewers and staff assistants as part of the review process; to applicant institutions/grantees to provide or obtain data regarding the proposal review process, award decisions, or the administration of awards; to government contractors, experts, volunteers and researchers and educators as necessary to complete assigned work; to other government agencies needing information as part of the review process or in order to coordinate programs; and to another Federal agency, court or party in a court or Federal administrative proceeding if the government is a party. Information about Principal Investigators may be added to the Reviewer file and used to select potential candidates to serve as peer reviewers or advisory committee members. See Systems of Records, NSF-50, "Principal Investigator/Proposal File and Associated Records," 63 Federal Register 267 (January 5, 1998), and NSF-51, "Reviewer/Proposal File and Associated Records," 63 Federal Register 268 (January 5, 1998). Submission of the information is voluntary. Failure to provide full and complete information, however, may reduce the possibility of receiving an award.

Public reporting burden for this collection of information is estimated to average 120 hours per response, including the time for reviewing instructions. Send comments regarding this burden estimate and any other aspect of this collection of information, including suggestions for reducing this burden, to: Reports Clearance Officer; Information Dissemination Branch, DAS; National Science Foundation; Arlington, VA 22230.

### **YEAR 2000 REMINDER**

In accordance with Important Notice No. 120 dated June 27, 1997, Subject: Year 2000 Computer Problem, NSF awardees are reminded of their responsibility to take appropriate actions to ensure that the NSF activity being supported is not adversely affected by the Year 2000 problem. Potentially affected items include: computer systems, databases, and equipment. The National Science Foundation should be notified if an awardee concludes that the Year 2000 will have a significant impact on its ability to carry out an NSF funded activity. Information concerning Year 2000 activities can be found on the NSF web site at <http://www.nsf.gov/oirm/y2k/start.htm>.

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