

# **Materials World Network: Cooperative Activity in Materials Research between US Investigators and their Counterparts Abroad (MWN)**

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## **Program Solicitation**

**NSF 05-594**

*Replaces Document NSF 04-599*



**National Science Foundation**  
Directorate for Mathematical and Physical Sciences  
Division of Materials Research

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

October 17, 2005

## **SUMMARY OF PROGRAM REQUIREMENTS**

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### **General Information**

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#### **Program Title:**

Materials World Network: Cooperative Activity in Materials Research between US Investigators and their Counterparts Abroad (MWN)

#### **Synopsis of Program:**

Continued progress in materials research is increasingly dependent upon collaborative efforts among several different disciplines, as well as closer coordination among funding agencies and effective partnerships involving universities, industry, and national laboratories. In addition, because of the growing interdependence of the world's economies, partnerships are important not only at the national level but from an international point of view as well. The National Science Foundation is working jointly with counterpart national, regional and multinational funding organizations worldwide to enhance opportunities for collaborative activities in materials research between US investigators and their colleagues abroad. This solicitation describes an activity to foster opportunities for such collaborations. It includes joint activities between NSF and funding organizations in Europe, Africa, Asia and other regions.

Proposals submitted to NSF in response to this solicitation must have clear relevance to fundamental materials phenomena, synthesis, characterization and/or properties. Proposals will be evaluated within the context of programmatic areas supported by the NSF Division of Materials Research. NSF will accept proposals from US universities and colleges addressing collaborations between researchers from the US and participating countries or regions. Concurrently, investigators at non-US research institutions should submit to the counterpart funding organization in their country or region a request for support of their side of the collaboration. NSF will consider support for the US side of such collaborations, with the expectation that funding or research organizations from the appropriate countries or regions will consider supporting the costs of the non-US participants. Projects proposed to NSF are expected to offer students and junior researchers the opportunity to participate in an international research and education experience and, more generally, for integrating research and training in an international environment, and to clearly demonstrate the value added by the international collaboration.

#### **Cognizant Program Officer(s):**

- Dr. Carmen Huber, Program Director, Office of Special Programs, Division of Materials Research, Directorate for Mathematical and Physical Sciences, telephone: (703) 292-4939, fax: (703) 292-9036, email: [chuber@nsf.gov](mailto:chuber@nsf.gov)

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

- 47.049 --- Mathematical and Physical Sciences

## Eligibility Information

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- **Organization Limit:**

Proposals may be submitted by US universities and colleges.

- **PI Eligibility Limit:** None Specified.
- **Limit on Number of Proposals:** An investigator may be Principal Investigator in only one proposal submitted in response to this solicitation.

## Award Information

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- **Anticipated Type of Award:** Standard or Continuing Grant
- **Estimated Number of Awards:** 15 to 30 - depending on quality of proposals and availability of funds
- **Anticipated Funding Amount:** \$3,000,000 total in FY 2006, depending on availability of funds

## Proposal Preparation and Submission Instructions

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### A. Proposal Preparation Instructions

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

### B. Budgetary Information

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

### C. Due Dates

- **Full Proposal Deadline Date(s)** (due by 5 p.m. submitter's local time):  
October 17, 2005

## Proposal Review Information

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

## Award Administration Information

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- **Award Conditions:** Standard NSF award conditions apply.
- **Reporting Requirements:** Standard NSF reporting requirements apply.

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## I. INTRODUCTION

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The basic properties of materials frequently define the capabilities, potential, reliability and limitations of technology. Improved materials will play an increasing role in efforts to increase energy efficiency, promote environmental protection, develop information and communications systems, and provide modern and reliable transportation and civil infrastructure. Advances in fundamental materials research enable progress to be made across a broad range of scientific and engineering disciplines and technological areas with dramatic impacts on society.

Continued progress in materials research is increasingly dependent upon collaborative efforts among several different disciplines, as well as closer coordination among funding agencies and effective partnerships involving universities, industry, and national laboratories. In addition, because of the growing interdependence of the world's economies, partnerships are important not only at the national level but from an international point of view as well.

The National Science Foundation has co-sponsored a series of international workshops designed to help stimulate enhanced collaboration among materials researchers and create networks linking individuals and centers in participating regions. The first workshop, held in Saltillo, Mexico, in May 1995, involved scientists and engineers from the US, Canada, and Mexico. Similar workshops followed to identify opportunities for collaboration among researchers from the US and the European Union (Belgium, 1996), the Americas (Brazil, 1998), the Asia-Pacific region (Hawaii, 1998), and Africa (South Africa, 2000). These workshops have identified possible areas for mutually beneficial collaborations, and recommended that extensive use be made of electronic communication, information exchanges, and databases to promote and facilitate research collaborations and education activities at the international level. Reports of the workshops can be found on the web page of the International Union of Materials Research Societies at <http://www.iumrs.org/>.

The National Science Foundation is working together with counterpart national, regional and multinational funding organizations worldwide to enhance opportunities for collaborative activities in materials research between US investigators and their colleagues abroad. In recent years, NSF issued calls for proposals from US investigators for collaborative research with their foreign counterparts. A list of awards resulting from these competitions can be found in the Web page of the NSF Division of Materials Research, Office of Special Programs ([http://www.nsf.gov/funding/pgm\\_list.jsp?org=DMR](http://www.nsf.gov/funding/pgm_list.jsp?org=DMR))

## II. PROGRAM DESCRIPTION

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This solicitation describes an activity to foster opportunities for collaboration in materials research between investigators in the US and their counterparts abroad. It includes joint activities between NSF and funding organizations in Africa, through the Africa-US Materials Collaboration, Europe, Asia, and other countries or regions.

**Proposals submitted to NSF in response to this solicitation must have clear relevance to fundamental materials phenomena, synthesis, characterization and/or properties. Projects not having this focus will not be considered for funding. Proposals will be evaluated within the context of programmatic areas supported by the NSF Division of Materials Research. For areas supported by the Division of Materials Research (DMR) see <http://www.nsf.gov/>**

[funding/pgm\\_list.jsp?org=DMR](#) . It is strongly recommended that you contact DMR program staff listed in Section VIII to ascertain that the scientific or technical focus of the proposed research is appropriate for this solicitation. Proposals not appropriate for consideration by the Division of Materials Research may be returned without review.

NSF will accept proposals from US universities and colleges addressing collaborations between researchers from the US and participating countries or regions. Concurrently, investigators at non-US research institutions should submit to the counterpart funding organization in their country or region a request for support of their side of the collaboration. NSF will consider support for the US side of such collaborations, with the expectation that funding or research organizations from the appropriate countries or regions will consider supporting the costs of the non-US participants. **NSF will not accept proposals from investigators at non-US institutions.** Contact information for the NSF and funding organizations abroad is listed in Section VIII.

Projects proposed to NSF are expected to offer students and junior researchers the opportunity to participate in an international research and education experience and, more generally, for integrating research and training in an international environment. Proposals that include exchange of students and post-doctoral research associates between the US and abroad are strongly encouraged, as well as proposals from junior faculty and members of underrepresented groups in science and engineering.

Proposals addressing materials research areas as described above are covered by this solicitation. Of special interest to NSF are proposals including activities that build upon and expand current cyber infrastructure capabilities, such as remote use of instrumentation, database creation and use, visualization and virtual experimentation, virtual networking, etc, to enhance and advance the international collaboration.

In addition to proposals for collaborative materials research and education, proposals to interface networks of US investigators and counterpart networks abroad will also be considered. Proposals to NSF in support of activities such as workshops, meetings, brief personnel exchanges, etc., of networks of US researchers with counterpart European networks may be linked to efforts supported, for example, by the European Science Foundation (see List of Contacts below and [www.esf.org/pesc](http://www.esf.org/pesc)).

Proposals to NSF from individual investigators and groups of investigators are welcome. Proposals should be balanced in terms of intellectual effort and participation in the US and abroad.

### III. ELIGIBILITY INFORMATION

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Proposals may be submitted by US universities and colleges. An investigator may be Principal Investigator on only one proposal submitted in response to this solicitation.

### IV. AWARD INFORMATION

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The estimated number of awards is 15 to 30, depending on quality of proposals and availability of funds. The total anticipated funding amount is \$3,000,000 in FY 2006. Estimated total funding, number of awards and average award size/duration are subject to the availability of funds. Awards may be standard or continuing grants.

### V. PROPOSAL PREPARATION AND SUBMISSION INSTRUCTIONS

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#### A. Proposal Preparation Instructions

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##### Full Proposal Instructions:

Proposals submitted in response to this program announcement/solicitation should be prepared and submitted in accordance with the general guidelines contained in the NSF *Grant Proposal Guide* (GPG). The complete text of the GPG is available electronically on the NSF Website at: [http://www.nsf.gov/publications/pub\\_summ.jsp?ods\\_key=gpg](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 [pubs@nsf.gov](mailto:pubs@nsf.gov).

Requests for additional funding (supplement) by a US Principal Investigator to an existing NSF award may not be submitted

to this competition; such requests should be made directly through the program where the existing award is administered.

Proposals from foreign investigators should be submitted to the appropriate counterpart funding organization in accordance with the guidelines of that organization. Because application guidelines differ among the participating organizations, it is not necessary to submit identical proposals to NSF and the counterpart organization(s). However, whenever the guidelines and evaluation criteria from NSF and the counterpart organization(s) allow for submission of a single project description to both organizations, proposers are encouraged to do so. In such case, the Project Description of the counterpart proposal (item 1.b below) is redundant and need not be included as a supplementary document.

The following guidelines, in addition to those in the NSF GPG, should be followed in preparing the proposal to NSF:

- The title of the proposal to NSF should begin as: "Materials World Network: ... "
- The Project Summary must address in separate statements the intellectual merit and the broader impacts of the proposed activity and, within the context of these two statements, the value added by the proposed international collaboration.
- The duration of the project proposed to NSF should match the duration of the counterpart project proposed to the other funding organization(s).
- The proposal to NSF **must be accompanied by two additional items** entered into the "**Supplementary Docs**" FastLane form. **Proposals that do not include these two items or do not observe the indicated page limitations will be returned without review.**

1. Information clearly identifying the nature and scope of the corresponding counterpart proposal must be provided. *For each counterpart proposal* include:

a. Summary Information: name of the counterpart agency or agencies, names and affiliations of principal participants, the counterpart project title and identification code (if any), and date of proposal submission. Also state the requested funds, requested start and termination dates, and provide a technical abstract. (Limit: 2 pages).

b. Project Description of the counterpart proposal including, for example, state of knowledge of the field, results from previous work, objectives, plan of work, expected outcomes and their significance (Limit: 15 pages - this is an upper limit, not a required length). If the same project description is submitted to NSF and the counterpart funding organization(s) (see above) and/or the main body of the proposal to NSF already contains a description of the counterpart project, then this item is not necessary.

c. Biographical sketches or curriculum vitae of the senior project personnel, including significant publications related to the proposed project. (Limit: 2 pages per individual).

2. A specific summary of the proposed interaction, including visits between the U.S. and their partners abroad, stating the anticipated scientific benefits of the interaction, must be provided. (Limit: 2 pages).

- No additional letters of support or recommendation may be included.

Proposers are reminded to identify the program announcement/solicitation number (05-594) in the program announcement/solicitation block on the proposal Cover Sheet. Compliance with this requirement is critical to determining the relevant proposal processing guidelines. Failure to submit this information may delay processing.

## **B. Budgetary Information**

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### **Cost Sharing:**

Cost sharing is not required by NSF in proposals submitted under this Program Solicitation.

## C. Due Dates

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

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

October 17, 2005

## D. FastLane Requirements

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Proposers are required to prepare and submit all proposals for this announcement/solicitation through the FastLane system. Detailed instructions for proposal preparation and submission via FastLane are available at: <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](mailto:fastlane@nsf.gov). The FastLane Help Desk answers general technical questions related to the use of the FastLane system. Specific questions related to this program announcement/solicitation should be referred to the NSF program staff contact(s) listed in Section VIII of this announcement/solicitation.

*Submission of Electronically Signed Cover Sheets.* The Authorized Organizational Representative (AOR) must electronically sign the proposal Cover Sheet to submit the required proposal certifications (see Chapter II, Section C of the [Grant Proposal Guide](#) for a listing of the certifications). The AOR must provide the required electronic certifications within five working days following the electronic submission of the proposal. Proposers are no longer required to provide a paper copy of the signed Proposal Cover Sheet to NSF. Further instructions regarding this process are available on the FastLane Website at: <http://www.fastlane.nsf.gov>

## VI. PROPOSAL REVIEW INFORMATION

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### A. NSF Proposal Review Process

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

The National Science Board approved revised criteria for evaluating proposals at its meeting on March 28, 1997 ([NSB 97-72](#)). All NSF proposals are evaluated through use of the two merit review criteria. In some instances, however, NSF will employ additional criteria as required to highlight the specific objectives of certain programs and activities.

On July 8, 2002, the NSF Director issued [Important Notice 127](#), Implementation of new Grant Proposal Guide Requirements Related to the Broader Impacts Criterion. This Important Notice reinforces the importance of addressing both criteria in the preparation and review of all proposals submitted to NSF. NSF continues to strengthen its internal processes to ensure that both of the merit review criteria are addressed when making funding decisions.

In an effort to increase compliance with these requirements, the January 2002 issuance of the GPG incorporated revised proposal preparation guidelines relating to the development of the Project Summary and Project Description. Chapter II of the GPG specifies that Principal Investigators (PIs) must address both merit review criteria in separate statements within the one-page Project Summary. This chapter also reiterates that broader impacts resulting from the proposed project must be addressed in the Project Description and described as an integral part of the narrative.

Effective October 1, 2002, NSF will return without review proposals that do not separately address both merit review criteria within the Project Summary. It is believed that these changes to NSF proposal preparation and processing guidelines will more clearly articulate the importance of broader impacts to NSF-funded projects.

The two National Science Board approved merit review criteria are listed below (see the [Grant Proposal Guide](#) Chapter III.A for further information). The criteria include considerations that help define them. These considerations are suggestions and not all will apply to any given proposal. While proposers must address both merit review criteria, reviewers will be asked to address only those considerations that are relevant to the proposal being considered and for which he/she is qualified to make judgments.

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

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

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

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

NSF staff will give careful consideration to the following in making funding decisions:

***Integration of Research and Education***

One of the principal strategies in support of NSF's goals is to foster integration of research and education through the programs, projects, and activities it supports at academic and research institutions. These institutions provide abundant opportunities where individuals may concurrently assume responsibilities as researchers, educators, and students and where all can engage in joint efforts that infuse education with the excitement of discovery and enrich research through the diversity of learning perspectives.

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

Broadening opportunities and enabling the participation of all citizens -- women and men, underrepresented minorities, and persons with disabilities -- is essential to the health and vitality of science and engineering. NSF is committed to this principle of diversity and deems it central to the programs, projects, and activities it considers and supports.

**Additional Review Criteria:**

Reviewers will also take into consideration the value added by the proposed international collaboration in materials research, and the extent to which the collaboration integrates research and education and promotes diversity.

*Preference will be given to proposals where the efforts in the US and abroad are balanced and where students and junior researchers participate in the international collaboration.*

Representatives from NSF's Division of Materials Research will manage the review of proposals on the US side. NSF anticipates that after a corresponding evaluation of the counterpart proposal(s) by the appropriate counterpart funding organization(s), coordinated support will be arranged for successful proposals by the participating organizations. Information about counterpart proposals will be shared between the participating organizations as appropriate. While each side reserves the option to fund proposals independently, strong preference will be given to proposals with support from both NSF and the counterpart organization.

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

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All proposals are carefully reviewed by at least three other persons outside NSF who are experts in the particular field represented by the proposal. Proposals submitted in response to this announcement/solicitation will be reviewed by Ad Hoc and/or panel review.

Reviewers will be asked to formulate a recommendation to either support or decline each proposal. The Program Officer assigned to manage the proposal's review will consider the advice of reviewers and will formulate a recommendation.

A summary rating and accompanying narrative will be completed and submitted by each reviewer. In all cases, reviews are treated as confidential documents. Verbatim copies of reviews, excluding the names of the reviewers, are sent to the Principal Investigator/Project Director by the Program Director. In addition, the proposer will receive an explanation of the decision to award or decline funding.

NSF is striving to be able to tell proposers whether their proposals have been declined or recommended for funding within six months. The time interval begins on the closing date of an announcement/solicitation, or the date of proposal receipt, whichever is later. The interval ends when the Division Director accepts the Program Officer's recommendation.

In all cases, after programmatic approval has been obtained, the proposals recommended for funding will be forwarded to the Division of Grants and Agreements for review of business, financial, and policy implications and the processing and issuance of a grant or other agreement. Proposers are cautioned that only a Grants and Agreements Officer may make commitments,

obligations or awards on behalf of NSF or authorize the expenditure of funds. No commitment on the part of NSF should be inferred from technical or budgetary discussions with a NSF Program Officer. A Principal Investigator or organization that makes financial or personnel commitments in the absence of a grant or cooperative agreement signed by the NSF Grants and Agreements Officer does so at their own risk.

## VII. AWARD ADMINISTRATION INFORMATION

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### A. Notification of the Award

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

### B. Award Conditions

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An NSF award consists of: (1) the award letter, which includes any special provisions applicable to the award and any numbered amendments thereto; (2) the budget, which indicates the amounts, by categories of expense, on which NSF has based its support (or otherwise communicates any specific approvals or disapprovals of proposed expenditures); (3) the proposal referenced in the award letter; (4) the applicable award conditions, such as Grant General Conditions (NSF-GC-1); \* or Federal Demonstration Partnership (FDP) Terms and Conditions \* and (5) any announcement or other NSF issuance that may be incorporated by reference in the award letter. Cooperative agreement awards are administered in accordance with NSF Cooperative Agreement Financial and Administrative Terms and Conditions (CA-FATC). Electronic mail notification is the preferred way to transmit NSF awards to organizations that have electronic mail capabilities and have requested such notification from the Division of Grants and Agreements.

\*These documents may be accessed electronically on NSF's Website at <http://www.nsf.gov/awards/managing/>. Paper copies of these documents may be obtained from the NSF Publications Clearinghouse, telephone (703) 292-7827 or by e-mail from [pubs@nsf.gov](mailto:pubs@nsf.gov).

More comprehensive information on NSF Award Conditions is contained in the NSF *Grant Policy Manual* (GPM) Chapter II, available electronically on the NSF Website at [http://www.nsf.gov/publications/pub\\_summ.jsp?ods\\_key=gpm](http://www.nsf.gov/publications/pub_summ.jsp?ods_key=gpm). The GPM is also for sale through the Superintendent of Documents, Government Printing Office (GPO), Washington, DC 20402. The telephone number at GPO for subscription information is (202) 512-1800. The GPM may be ordered through the GPO Website at <http://www.gpo.gov>.

### C. Reporting Requirements

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

Within 90 days after the expiration of an award, the PI also is required to submit a final project report. Failure to provide final technical reports delays NSF review and processing of pending proposals for the PI and all Co-PIs. PIs should examine the formats of the required reports in advance to assure availability of required data.

PIs are required to use NSF's electronic project reporting system, available through FastLane, for preparation and submission of annual and final project reports. This system permits electronic submission and updating of project reports, including information on project participants (individual and organizational), activities and findings, publications, and other specific products and contributions. PIs will not be required to re-enter information previously provided, either with a proposal or in earlier updates using the electronic system.

## VIII. CONTACTS FOR ADDITIONAL INFORMATION

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General inquiries regarding this program should be made to:

- Dr. Carmen Huber, Program Director, Office of Special Programs, Division of Materials Research, Directorate for Mathematical and Physical Sciences, telephone: (703) 292-4939, fax: (703) 292-9036, email: [chuber@nsf.gov](mailto:chuber@nsf.gov)

Other NSF Staff Contacts:

If a funding organization is not listed in this solicitation, US investigators should contact appropriate NSF staff in the Office of International Science and Engineering for further guidance.

Dr. Elizabeth E. Lyons, Regional Coordinator (Acting)

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Dr. Frances Li, Regional Coordinator (Acting)

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Contacts at other organizations:

Contact information in participating countries or regions is provided for the convenience of researchers in those countries or regions. Questions from US investigators should be directed to NSF.

Africa-USA Materials Collaboration Contacts:

ALGERIA **Ministère de l'enseignement supérieur et de la recherche scientifique**

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RWANDA

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TUNISIA

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UGANDA

**National Council for Science and Technology**

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Dr. Z.M. Nyiira, Executive Secretary

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ZIMBABWE

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Dr. Francis P. Gudyanga, Chairman

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Contacts in Europe :

**AUSTRIA Austrian Science Fund (FWF)**

<http://www.fwf.ac.at/en/index.asp>

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## IX. OTHER PROGRAMS OF INTEREST

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