Chemistry Research Instrumentation and Facilities: Departmental Multi-User Instrumentation (CRIF:MU)

Program Solicitation

NSF 05-578

***Replaces Document* NSF 03-563**

National Science Foundation
Directorate for Mathematical and Physical Sciences
Division of Chemistry

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

June 26, 2006

Fourth Monday in June

REVISIONS AND UPDATES

- The Division of Chemistry is committed to increasing access to sophisticated instrumentation. Effective with this solicitation, the CRIF:MU program strongly encourages principal investigators to exploit cyberinfrastructure to facilitate broadened access to instrumentation and the data it provides. In making awards, preference will be given to proposals that are cyber-enabled. Further details are provided in the full solicitation.
- The CRIF:MU program no longer requires cost-sharing.
- The maximum request is $500,000 for instrumentation. Additional funds may be requested for personnel who are needed to support cyber-enhanced projects.
- The Division of Chemistry will accept a maximum of two CRIF:MU proposals per institution. If an institution submits two proposals, at least one of the two proposals must involve cyberinfrastructure.
- Investigators are reminded that CRIF:MU proposals will only be reviewed if the majority of the research projects described therein are in areas normally supported by the Division of Chemistry. Proposals that are not compliant will be returned without review. The Major Research Instrumentation Program (MRI; NSF 05-515) provides funds for instrumentation in all areas of science and engineering supported by NSF.

SUMMARY OF PROGRAM REQUIREMENTS

General Information

Program Title:

Chemistry Research Instrumentation and Facilities: Departmental Multi-User Instrumentation (CRIF:MU)

Synopsis of Program:

The Chemistry Research Instrumentation and Facilities Program (CRIF) is structured to enable the National Science Foundation's Division of Chemistry to respond to a variety of needs for infrastructure that promotes research and education in areas traditionally supported by the Division (NSF Chemistry Homepage).

The Departmental Multi-User Instrumentation component of CRIF (CRIF:MU) provides funds to universities,

colleges, and consortia thereof for the purchase of multi-user instruments. The maximum request is $500,000 for instrumentation. Additional funds may be requested for personnel who are needed to support cyber-enhanced projects.

Other components of CRIF include:

- **CRIF:ID** The Instrument Development component of CRIF (CRIF:ID) provides funds for the design and construction of instruments that will enable new chemical measurements or will significantly broaden the use of chemical instrumentation.
- **CRIF:CRF** Cyberinfrastructure and Research Facilities (CRIF:CRF) provides funds to establish and support either centers for the development of cyber-enabled chemical research, or regional or national instrumentation facilities. Awards in CRIF:CRF range from $300,000-1,200,000/yr for up to five years.

Instrumentation for allied fields of research, such as molecular and cellular biosciences, materials science and chemical engineering, is provided through other NSF programs (see Section IX).

Cognizant Program Officer(s):

- Robert L. Kuczkowski, Program Officer, Directorate for Mathematical & Physical Sciences, Division of Chemistry, 1055 S, telephone: (703) 292-4953, fax: (703) 292-9037, email: rkuczkow@nsf.gov
- Katharine J. Covert, Program Director, Directorate for Mathematical & Physical Sciences, Division of Chemistry, 1055 S, telephone: (703) 292-4950, fax: (703) 292-9037, email: kcovert@nsf.gov
- Celeste Rohlfing, Program Director, Directorate for Mathematical & Physical Sciences, Division of Chemistry, 1055 S, telephone: (703) 292-4962, fax: (703) 292-9037, email: crohlfin@nsf.gov

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

- 47.049 --- Mathematical and Physical Sciences

Eligibility Information

- **Organization Limit:**

  Only academic institutions in the U.S. and U.S. territories may submit proposals.

- **PI Eligibility Limit:**

  The principal investigator must be the chemistry department chairperson or equivalent. Other investigators may be affiliated with U.S. academic institutions, non-profit research organizations, industry, government laboratories, or international institutions. No CRIF:MU award funds may go directly to industry, government laboratories or international institutions.

- **Limit on Number of Proposals:** Two per institution. If two are submitted, at least one must involve cyberinfrastructure.

Award Information

- **Anticipated Type of Award:** Standard or Continuing Grant
- **Estimated Number of Awards:** 20 depending upon award size and the quality of proposals
- **Anticipated Funding Amount:** $6,000,000 per fiscal year, depending upon the availability of funds

Proposal Preparation and Submission Instructions

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:** Other budgetary limitations apply. Please see the full text of this solicitation for further information.

C. Due Dates

- **Full Proposal Deadline Date(s)** (due by 5 p.m. submitter's local time):
  June 26, 2006
  Fourth Monday in June

Proposal Review Information

- **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:** Additional award conditions apply. Please see the full text of this solicitation for further information.
- **Reporting Requirements:** Standard NSF reporting requirements apply.

TABLE OF CONTENTS

I. INTRODUCTION

The Chemistry Research Instrumentation and Facilities Program (CRIF) is structured to enable the National Science Foundation's Division of Chemistry to respond to a variety of needs for infrastructure--instrumentation and facilities--that promotes research and education in areas traditionally supported by the Division (NSF Division of Chemistry Homepage). The Departmental Multi-User Instrumentation component of CRIF provides funds to universities, colleges, and consortia thereof for the purchase of multi-user instruments or upgrades of existing equipment. Proposals to enable remote access to existing instruments will also be considered.

II. PROGRAM DESCRIPTION

The NSF Division of Chemistry recognizes that opportunities for expanding the frontiers of knowledge and for education of our technical workforce require access to state-of-the-art instrumentation. The CRIF:MU program is a vehicle for these investments. Because acquiring and upgrading instruments can be costly, the Division leverages its investment by making CRIF:MU awards to groups of chemical scientists in academic departments rather than to individuals, who may obtain instrumentation through individual investigator awards.

As described in the report, "Revolutionizing Science and Engineering Through Cyberinfrastructure: Report of the NSF Blue-Ribbon Advisory Panel on Cyberinfrastructure," the manner in which scientific and engineering research and education is conducted will be radically transformed by cyberinfrastructure. The NSF Division of Chemistry shares this vision and has held a workshop that has identified research and education frontiers that would be enabled by investments in cyberinfrastructure. Although the full report from this workshop may be accessed at CHE Cyber Chemistry Workshop, pertinent material is reproduced below:

"…Advances in information technologies have made it possible to access and control scientific instruments in real-time from computers anywhere on the Internet. Technologies such as Web-controlled laboratory cameras, electronic notebooks, and videoconferencing provide a sense of virtual presence in a laboratory that partially duplicates the experience of being there. More than a decade of R&D and technological evolution has greatly reduced the time and effort required to offer secure remote-instrument access and proved the viability of remote-instrument services…."

Setting up new instruments for remote operation can now be as simple as running screen-sharing software or enabling remote options in control software.

"…The numerous benefits provided by access to remote instruments include sharing the acquisition, maintenance, and operating costs of expensive, cutting-edge instruments; broadening the range of capabilities available to local researchers and students; more effectively utilizing instruments; and easing the adoption of new techniques in research projects …".

"…Enhanced access to remote instruments would benefit the chemistry community. Remote access to expensive, high-end, state-of-the-art instruments will maximize their scientific impact, serve broader audiences, and allow more widespread use of current generation technologies in both research and education…."

The 2004 Committee of Visitors urged the Division of Chemistry to play a major role in supporting advances in this arena (COV Report). The Division strongly endorses this approach and encourages investigators to exploit advances in networking, web-based tools and other facets of cyberinfrastructure in order to facilitate broader access to the requested instrumentation.

III. ELIGIBILITY INFORMATION

The principal investigator must be the chemistry department chairperson or equivalent. Other investigators may be affiliated with U.S. academic institutions, non-profit research organizations, industry, government laboratories, or international institutions. No CRIF:MU award funds may go directly to industry, government laboratories or international institutions.

Only academic institutions in the U.S. and U.S. territories may submit proposals.

Limit on Number of Proposals: Two per institution. If two are submitted, at least one must involve cyberinfrastructure.

IV. AWARD INFORMATION

Approximately $6 million per fiscal year will fund approximately 20 awards as standard or continuing grants depending upon the quality of proposals and the availability of funds. Awards will have a three-year duration and are non-renewable. Award size is limited to $500,000 plus personnel costs for cyber-enabled projects.

V. PROPOSAL PREPARATION AND SUBMISSION INSTRUCTIONS

A. Proposal Preparation Instructions

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. 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.

This solicitation contains information that supplements the GPG proposal preparation guidelines.

Cover Sheet: The title of the proposal should include the type of instrument(s) requested, but not the manufacturer or the model number. An example of an appropriate title is: "Purchase (or Upgrade) of an X-Ray Diffractometer." If cyberinfrastructure is to be exploited to enable broader access, the word “cyber” should be included in the title. Effective dates may be February 1 (or later) of the year following submission of the proposal. The anticipated duration of the CRIF:MU awards is three years.

Project Description: The project description should address the general NSF review criteria (intellectual merit and broader impacts) as well as the CRIF:MU-specific review criteria.

The Project Description must address the following topics. The total length of the Project Description cannot exceed fifteen pages. Non-conforming proposals will be returned without review.

- Results from Prior NSF Support. Results of all NSF instrumentation awards in the last five years made to the proposing department through CRIF:MU and CHE-administered Major Research Instrumentation (MRI) programs must be included, regardless of the identity of the PI on the prior award(s). Reviewers will be asked to comment on the quality of the prior work described in this section of the proposal.
- Description of Instrument(s) and Rationale for Selection. Describe in this section the instrument(s)/upgrade(s) requested or plans to enable remote access on existing instrumentation. Special features needed in the requested instrument and any necessary accessories should be justified, both in this section and in the descriptions of research projects. For example, in a proposal for a high-field, multi-nuclear NMR spectrometer, the need for high-resolution, dispersion, and multi-nuclear capabilities must be justified by the proposed research uses and by departmental development strategies. If similar or related instruments exist in the department or elsewhere in the institution, the relation to the requested instrument should be indicated and the need for the additional instrument justified through usage data and by reference to new capabilities or enhanced capacity. Details on software and/or firmware such as screen-sharing software, electronic lab notebooks, and web-controlled cameras that will be purchased or developed to support remote access should be provided, if applicable. Any inter-institutional cooperation for leveraging the effectiveness of this investment in infrastructure should be described and supported by letters submitted as supplemental documents.
- Operation and Maintenance. This section should specify how and by whom the requested instrumentation is to be operated and maintained. For related existing instrumentation within the user community, information on usage and downtime should be included. Pertinent data on income from, and cost of, instrument services for the preceding year, including user charges, salaries of support personnel, maintenance contracts, shop charges, and other expenses, should be included. Details regarding scheduling, safety and training should also be included. If applicable, plans for enabling remote access must be provided in this section. Such plans should describe protocols for security, data acquisition, data processing, training (including off-site users), and scalability. If personnel costs for cyber-enabled instrumentation are requested, justification must be provided, including details of the work to be carried out by said personnel. In addition, biosketches must be provided for all personnel for whom support is requested.

- Proposed Research. This section should summarize pertinent research projects in the context of the broad research themes of the major users of the proposed instrument(s). Projects currently supported by the Division of Chemistry should be identified. Research project summaries of major users should provide enough information for reviewers to assess scientific merit, the projected use of the proposed instrument, and the need for special features or accessories. Research descriptions should be provided for no more than six major users; other users should be listed by name only. Projects ineligible for NSF support (e.g., drug development work) should not be included.

Biographical Sketches: This section should include biographical sketches (two pages each) for the Principal Investigator (chair or equivalent), co-PIs, all major users and any personnel who will be supported to implement cyber-related use of the instrumentation. Consult the Grant Proposal Guide for proper format. To aid the NSF Program Director in identifying conflicts of interest that must be avoided during review, all investigators, major users and other personnel must include a list of researchers with whom they have collaborated during the past four years, and the names of their graduate and postdoctoral advisors.

Budget: PIs may request up to $500,000 for the purchase or upgrade, installation, commissioning, and calibration of an instrument, and supporting hardware and software. Additional funds to support cyber-related personnel may be requested only if the proposed instrument will be accessible to remote users, or if the request involves modification of an existing instrument to allow remote access. For successful proposals, the amount of the NSF award will be based on the net price of the instrumentation to the institution, including all academic discounts and other special purchase arrangements. Single research instruments, research instrumentation systems, and ensembles of research instruments that enable a particular research thrust may be requested. No funds will be provided for instrument maintenance or operation**.** However, for those proposals involving the use of cyberinfrastructure to enhance accessibility, funds may be requested for personnel to support this endeavor for up to the full duration of the award (three years). PIs on cyberinfrastructure-relevant proposals should also include in their budget funds to travel to a cyber-instrumentation meeting at NSF that will take place during the award period.

Current and Pending Support: A summary of all extant research support from all sources must be provided for the PI, co-PIs, all major users and other personnel. If these individuals do not have research support, a statement explicitly stating this must be included. Disclosure is required if proposals for the same or related instrumentation are planned or pending with other funding sources.

Supplemental Information: Itemized manufacturers quotes for the requested instrumentation are required. They must be scanned into the Supplementary Documents section of the FastLane proposal and submitted electronically as part of the proposal. Letters of support from collaborators at other institutions must also be submitted in this section.

Proposers are reminded to identify the program announcement/solicitation number (05-578) 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

Cost Sharing:

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

Other Budgetary Limitations:

When justified by the reviewers' comments, the program director may recommend support at less than the requested level. If the institution feels that the recommended amount is not acceptable, it may reject the offer of an award. The program's recommendation is based on scientific judgment and optimal use of Federal funds and is not to be construed by the institution as negotiation of matching funds.

C. Due Dates

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

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

June 26, 2006

Fourth Monday in June

Fourth Monday in June annually thereafter

D. FastLane Requirements

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. 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

A. NSF Proposal Review Process

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:

- How does the proposed instrumentation impact the technical work of the PIs and, where appropriate, their collaborators at remote locations? Will research conducted with the requested instrumentation advance knowledge and understanding in the relevant fields? Do prior research results from this user community indicate that the instrumentation will be used effectively? Will the results of the research conducted using the instrumentation be broadly disseminated?
- Does the department have the technical expertise and infrastructure to make effective use of the new or enhanced instrumentation? Is the plan for management and maintenance of the instrumentation appropriate and does it facilitate multi-user accessibility?
- If applicable, are there detailed plans for remote access to the instrumentation, including training, security, the user interface, and data archiving and sharing ?
- Is there a plan to use the new or enhanced instrumentation in teaching, training and learning? How will the instrumentation impact the educational programs of the user communities? Will participation by underrepresented groups be enhanced by the instrumentation?

In cases of comparable merit, priority will be given to requests that strengthen research activities already supported by the Division of Chemistry and that broaden participation through use of cyberinfrastructure.

B. Review Protocol and Associated Customer Service Standard

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.

In most cases, proposers will be contacted by the Program Officer after his or her recommendation to award or decline funding has been approved by the Division Director. This informal notification is not a guarantee of an eventual award.

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

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 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

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.

Consistent with the requirements of OMB Circular A-16, *Coordination of Geographic Information and Related Spatial Data Activities*, and the Federal Geographic Data Committee, all NSF awards that result in relevant geospatial data must be submitted to Geospatial One-Stop in accordance with the guidelines provided at: www.geodata.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. 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/.

*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.

Special Award Conditions:

Instruments funded under this program are intended for the use of a department or a group of investigators. The title to the instrumentation will vest with the awardee institution. **The instrumentation will remain at the awardee institution even if the PI, co-PI or other major users transfer to another institution.**

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 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

General inquiries regarding this program should be made to:

- Robert L. Kuczkowski, Program Officer, Directorate for Mathematical & Physical Sciences, Division of Chemistry, 1055 S, telephone: (703) 292-4953, fax: (703) 292-9037, email: rkuczkow@nsf.gov
- Katharine J. Covert, Program Director, Directorate for Mathematical & Physical Sciences, Division of Chemistry, 1055 S, telephone: (703) 292-4950, fax: (703) 292-9037, email: kcovert@nsf.gov
- Celeste Rohlfing, Program Director, Directorate for Mathematical & Physical Sciences, Division of Chemistry, 1055 S, telephone: (703) 292-4962, fax: (703) 292-9037, email: crohlfin@nsf.gov

For questions related to the use of FastLane, contact:

- Paul G. Spyropoulos, Computer Specialist, Directorate for Mathematical & Physical Sciences, Division of Chemistry, 1055 S, telephone: (703) 292-4968, fax: (703) 292-9037, email: pspyropo@nsf.gov

IX. OTHER PROGRAMS OF INTEREST

The NSF *Guide to Programs* is a compilation of funding for research and education in science, mathematics, and engineering. The NSF *Guide to Programs* is available electronically at http://www.nsf.gov/cgi-bin/getpub?gp. General descriptions of NSF programs, research areas, and eligibility information for proposal submission are provided in each chapter.

Many NSF programs offer announcements or solicitations concerning specific proposal requirements. To obtain additional information about these requirements, contact the appropriate NSF program offices. 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, which is updated daily on the NSF Website at http://www.nsf.gov/home/ebulletin, and in individual program announcements/solicitations. Subscribers can also sign up for NSF's MyNSF News Service (http://www.nsf.gov/mynsf/) to be notified of new funding opportunities that become available.

Related Programs:

Related NSF programs for research instrumentation and instrument development are listed below.

Major Research Instrumentation: NSF 05-515

Instrumentation for Materials Research: NSF 05-522

Instrumentation for Materials Research-Major Instrumentation Projects: NSF 05-513

Earth Sciences Instrumentation and Facilities: NSF 04-507

Instrument Development for Biological Research: NSF 05-536

Multi-user Equipment and Instrumentation Resources for Biological Sciences: NSF 05-534

CISE Computing Research Infrastructure: NSF 04-588

Small Business Innovation Research and Small Business Technology Transfer: NSF 05-557

Course, Curriculum and Laboratory Improvement: NSF 05-559

Chemistry Research Instrumentation and Facilities: Instrument Development: NSF 04-534

Chemistry Research Instrumentation and Facilities: Cyberinfrastructure and Research Facilities: NSF 05-555

Scientific Computing Research Environments for the Mathematical Sciences: NSF 05-538

Instrumentation primarily for teaching or education is provided through the NSF Division of Undergraduate Education's Course, Curriculum and Laboratory Improvement Program.

ABOUT THE NATIONAL SCIENCE FOUNDATION

The National Science Foundation (NSF) funds research and education in most fields of science and engineering. Awardees 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, although some programs may have special requirements that limit eligibility.

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 GPG Chapter II, Section D.2 for instructions regarding preparation of these types of proposals.

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: pubs@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; 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 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.

An agency may not conduct or sponsor, and a person is not required to respond to an information collection unless it displays a valid 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 this burden estimate and any other aspect of this collection of information, including suggestions for reducing this burden, to: Suzanne Plimpton, Reports Clearance Officer, Division of Administrative Services, National Science Foundation, Arlington, VA 22230.

OMB control number: 3145-0058.

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