Dear Colleagues:

The next deadline for submission of proposals to the NSF Major Research Instrumentation (MRI) program is January 01st to January 19th 2020. Since NSF limits the number of MRI applications to three, SFSU has a formal procedure for selecting the proposals that can go forward for submission to the NSF by the application deadline. If you are interested in applying for an MRI grant by the January 2020 deadline, please continue reading.

Please note: Each institution can only submit a maximum of three MRI proposals that are based on the dollar amount of the funding request. A maximum of two submissions are permitted in Track 1, i.e., proposals requesting $100,000 to less than $1 million; only one submission is permitted in Track 2, i.e., proposals requesting $1 million up to $4 million. Proposal submissions within the two tracks may be either for acquisition or development of a research instrument. NSF strongly values MRI proposals that seek to develop next-generation research instruments that open new frontiers of research.

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**Call for Pre-proposals: NSF Major Research Instrumentation (MRI) program**

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<tr>
<td>Frequently Asked Questions (Note that this document may not reflect the changes to Track 1 and 2)</td>
<td><a href="https://www.nsf.gov/publications/pub_summ.jsp?ods_key=nsf15012">https://www.nsf.gov/publications/pub_summ.jsp?ods_key=nsf15012</a></td>
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<tr>
<td>Pre-Proposal Due Date</td>
<td>September 30, 2019, 9 AM</td>
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<tr>
<td>Submit pre-proposals in PDF format as email attachment to:</td>
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<td>Michael Scott <a href="mailto:mjscott@sfsu.edu">mjscott@sfsu.edu</a> AND Uschi Simonis <a href="mailto:uschi@sfsu.edu">uschi@sfsu.edu</a></td>
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<td>Number of Proposals per Organization:</td>
<td>Three: Two for instrument acquisition/development below $1 million. One for instrument acquisition/development in the range of $1 million to $4 million</td>
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<tr>
<td>NSF Proposal Due Date</td>
<td>Submission Window - January 01st to January 19th, 2020</td>
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If you like to submit an MRI grant proposal by the January 2020 deadline, please email a preproposal containing a cover sheet, a one-page Project Summary, and a narrative (two-page maximum) with the required information in PDF format to Michael J. Scott (mjscott@sfsu.edu), and Uschi Simonis (uschi@sfsu.edu) no later than September 30, 2019, 9 AM.

Please provide the following information:

**Cover sheet:** Please include
- Name(s) of the principal investigator (PI) and co-principal investigator(s) [co-PI(s)].
- Name(s) of the participating department(s).
- Project title that must be concise and convey the primary purpose of the proposal, e.g., "MRI: Acquisition of___," or "MRI: Development of___."
  Consortium project titles must also be identified in the title: "MRI Consortium: Acquisition of___." or "MRI Consortium: Development of___."
**Project Summary:** Please include the following sections (1 page maximum):

- **Project Overview**
- *Intellectual Merit* of the proposed activity, and
- *Broader Impacts* of the proposed activity.

**Proposal Narrative:** Please include the following information (maximum 2 pages)

- Type of instrument to be acquired or developed and approximate cost-estimate.
- Need for the instrument. Please include the specific need(s) of each PI/co-PI for the instrument and identify the co-PI(s) who would be responsible for the award if the PI is no longer available.
- Short-term and long-term plan for instrument location and maintenance.
- Benefits to SFSU, its students, and faculty members.

The information on the cover page, project summary, and narrative will be used to decide which of the proposals can go forward. For evaluation, we will use the same standards that are used by the NSF, which means that the one-page *Project Summary* should have three separate sections – *Project Overview*, a statement on the *Intellectual Merit* of the proposed activity, and a statement of the *Broader Impacts* of the proposed activity.

Please note that multi-investigator and multi-disciplinary proposals will be given preference.

A decision on which proposals are selected for submission to the NSF will be made in a timely fashion, such that proposers have time to develop and prepare the full proposal.

SFSU has been very successful in receiving NSF MRI awards averaging about one award a year for the last 10 years. In total, CoSE faculty members received 17 MRI awards since 2005 totaling more than $6.8 M. Let’s hope that we can continue this remarkable record of success.

In the attachment (see below) are included the NSF guidelines for writing the summary page, the MRI review criteria, and examples for illustrating the Broader Impacts. Please note that the MRI program does not support the acquisition or development of a suite of instruments to outfit research laboratories or facilities, or that can be used to conduct independent research activities simultaneously.

We are looking forward to your applications. If you have questions, please do not hesitate to contact Uschi and me.

-Michael
Guidelines for Writing the NSF Project Summary:

The proposal must contain a summary of the proposed activity suitable for publication, not more than one page in length. It should not be an abstract of the proposal, but rather a self-contained description of the activity that would result if the proposal were funded. The summary should be written in the third person and include a statement of the goal, objectives, and methods to be employed. It must clearly address in separate statements (within the one-page summary):

- the intellectual merit of the proposed activity; and
- the broader impacts resulting from the proposed activity.

It should be informative to other persons working in the same or related fields and, insofar as possible, understandable to a scientifically or technically literate lay reader. Proposals that do not separately address both merit review criteria within the one-page Project Summary will be returned without review.

Review Criteria NSF MRI Proposals:

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, original, or potentially transformative concepts? How well conceived and organized is the proposed activity? Is there sufficient access to resources?

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

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

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

Integrating Diversity into NSF Programs, Projects, and Activities. Broadening opportunities and enabling the participation of all citizens -- women and men, under-represented 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 for MRI Proposals:
In addition to the evaluation criteria stated above, MRI program reviewers will also assess:

Review Criteria for All Proposals.
The extent to which the proposed project will make a substantial improvement in the institution's capabilities to conduct leading-edge research, to provide research experiences for undergraduate students using leading edge-facilities, and to broaden the participation in science and engineering research by women, underrepresented minorities and persons with disabilities.

**Instrument Acquisition Proposals.**

- The extent of shared use of the instrumentation for research and/or research training.
- Whether the management plan includes sufficient infrastructure and technical expertise to allow effective usage of the instrument; and provides the organization’s commitments for operations and maintenance.
- Whether the request for operations and maintenance is justified and reasonable in magnitude. If direct support for student involvement in operations and maintenance is requested, reviewers will be asked to evaluate the involvement in terms of both instrument needs and training the next generation of instrumentalists.
- Plans for using the new or enhanced research capability in research and research training.
- For instrument acquisition proposals of $1 million or above, proposals should address the potential impact of the instrument on the research community of interest and at the regional or national level when appropriate.

**Instrument Development Proposals:**

- The appropriateness of submission as a development (Track 2) proposal.
- The adequacy of the management plan. Does the plan have a realistic, detailed schedule? Are mechanisms in place to deal with potential risks?
- The availability of appropriate technical expertise to design and construct the instrument. If direct support for student involvement in development efforts is requested, reviewers will be asked to evaluate the involvement in terms of both project needs and training the next generation of instrumentalists.
- The appropriateness of the cost of the new technology.
- The need for development of a new instrument. Will the proposed instrument enable enhanced performance over existing instruments, or new types of measurement or information gathering? Is there a strong need for the new instrument in the larger user community?

**Examples for Illustrating Broader Impacts**

**Advance Discovery and Understanding While Promoting Teaching, Training Learning**

**Examples of Activities:**

- Integrate research activities into the teaching of science, math and engineering at all educational levels (e.g., K-12, undergraduate science majors, non-science majors, and graduate students).
- Include students (e.g., K-12, undergraduate science majors, non-science majors, and/or graduate students) as participants in the proposed activities as appropriate.
- Participate in the recruitment, training, and/or professional development of K-12 science and math teachers.
- Develop research-based educational materials or contribute to databases useful in teaching (e.g., K-16 digital library).
- Partner with researchers and educators to develop effective means of incorporating research into learning and education.
- Encourage student participation at meetings and activities of professional societies.
- Establish special mentoring programs for high school students, undergraduates, graduate students, and technicians conducting research.
- Involve graduate and post-doctoral researchers in undergraduate teaching activities.
• Develop, adopt, adapt or disseminate effective models and pedagogic approaches to science, mathematics and engineering teaching.

**Broaden Participation of Underrepresented Groups**

*Examples of Activities:*
• Establish research and education collaborations with students and/or faculty who are members of underrepresented groups.
• Include students from underrepresented groups as participants in the proposed research and education activities.
• Establish research and education collaborations with students and faculty from non-Ph.D.-granting institutions and those serving underrepresented groups.
• Make campus visits and presentations at institutions that serve underrepresented groups.
• Establish research and education collaborations with faculty and students at community colleges, colleges for women, undergraduate institutions, and EPSCoR institutions.
• Mentor early-career scientists and engineers from underrepresented groups who are submitting NSF proposals.
• Participate in developing new approaches (e.g., use of information technology and connectivity) to engage underserved individuals, groups, and communities in science and engineering.
• Participate in conferences, workshops and field activities where diversity is a priority.

**Enhance Infrastructure for Research and Education**

*Examples of Activities:*
• Identify and establish collaborations between disciplines and institutions, among the U.S. academic institutions, industry and government and with international partners.
• Stimulate and support the development and dissemination of next-generation instrumentation, multi-user facilities, and other shared research and education platforms.
• Maintain, operate and modernize shared research and education infrastructure, including facilities and science and technology centers and engineering research centers.
• Upgrade the computation and computing infrastructure, including advanced computing resources and new types of information tools (e.g., large databases, networks and associated systems, and digital libraries).
• Develop activities that ensure that multi-user facilities are sites of research and mentoring for large numbers of science and engineering students.

**Broad Dissemination to Enhance Scientific and Technological Understanding**

*Examples of Activities:*
• Partner with museums, nature centers, science centers, and similar institutions to develop exhibits in science, math, and engineering.
• Involve the public or industry, where possible, in research and education activities.
• Give science and engineering presentations to the broader community (e.g., at museums and libraries, on radio shows, and in other such venues.).
• Make data available in a timely manner by means of databases, digital libraries, or other venues such as CD-ROMs.
• Publish in diverse media (e.g., non-technical literature, and websites, CD-ROMs, press kits) to reach broad audiences.
• Present research and education results in formats useful to policy-makers, members of Congress, industry, and broad audiences.
• Participate in multi- and interdisciplinary conferences, workshops, and research activities.
• Integrate research with education activities in order to communicate in a broader context.
Benefits to Society

Examples of Activities:
- Demonstrate the linkage between discovery and societal benefit by providing specific examples and explanations regarding the potential application of research and education results.
- Partner with academic scientists, staff at federal agencies and with the private sector on both technological and scientific projects to integrate research into broader programs and activities of national interest.
- Analyze, interpret, and synthesize research and education results in formats understandable and useful for non-scientists.
- Provide information for policy formulation by Federal, State or local agencies.