

# Program Announcement To DOE National Laboratories LAB 06-13

## *Mid-Scale Instrumentation*

**A change was made to this Notice on April 19, 2006. Section 3.5 Narrative in the guidance for the preparation of laboratory proposals has been revised.**

**SUMMARY:** The Office of Basic Energy Sciences (BES) of the Office of Science (SC), U.S. Department of Energy (DOE), in keeping with its mission to assist in strengthening the Nation's scientific research enterprise through the support of fundamental science and the experimental tools to perform basic research, announces its interest in receiving proposals for mid-scale instrumentation projects which includes instrument upgrades, instrument replacements, and new instrumentation. Scientific progress is predicated on observations of new phenomena, which often involve the development and implementation of improved instrumentation and tools. Many instruments have a lifetime of 7-10 years after which the instruments may undergo major upgrades or be retired. Thus, 10-15% of a program's capital investment in instruments must be upgraded or replaced every year. There is a significant national need for mid-scale instruments that serve multiple users who are engaged in performing basic research in support of the nation's energy mission. Two broad categories of instrumentation will be considered for funding; 1) x-ray and neutron scattering instrumentation including the development of new instrument concepts, and  
2) other mid-scale instrumentation including, but not limited to, electron microcharacterization and scanning probe microscopy, laser-based systems for ultrafast science, table-top x-ray sources, and diagnostic applications, high field NMR's, ESR's, specialized mass spectrometers, high field magnets, crystal growth facilities, and computer clusters or midrange servers in the 1-2 Teraflop range capable of supporting local production computing for a group effort.

The ability to conduct innovative fundamental research which enables science relevant to BES' Core Research Activities should be emphasized in each proposal. More detailed descriptions of these core research areas can be found at <http://www.science.doe.gov/bes/brochures/CRA.html>. This Notice is restricted to principal investigators currently supported by BES, and the instrumentation requested must be utilized in conjunction with BES-funded projects which benefit a large research group. X-ray and neutron scattering instrumentation requests are for construction and implementation at DOE-supported synchrotron light sources and neutron sources only.

**DATES:** Potential researchers are **required** to submit a brief preproposal through appropriate Laboratory channels. Preproposals referencing Program Announcement LAB 06-13 must be received by DOE by 4:30 p.m., Eastern Time, May 17, 2006. Preproposals will be reviewed for conformance with the guidelines presented in this Notice and suitability in the technical areas specified in this Notice. A response to the preproposals encouraging or discouraging formal proposals will be communicated to the researchers by June 30, 2006.

Only those preproposals that receive notification from DOE encouraging a formal proposal may submit full proposals. **No other formal proposals will be considered.** Formal proposals in response to this Notice must be received by August 30, 2006.

**ADDRESSES:** Preproposals referencing Program Announcement LAB 06-13 should be sent as PDF file attachments via e-mail to: [Midscaleinstrumentation@science.doe.gov](mailto:Midscaleinstrumentation@science.doe.gov) with "Program Announcement LAB 06-13" as the subject. No FAX or mail submission of preproposals will be accepted.

**NOTE:** Each FFRDC may submit up to four preproposals as lead institution; the first four preproposals received from an FFRDC as lead institution will be considered to be that institution's official submission. BES reserves the right to encourage, in whole or in part, any, all, or none of the preproposals submitted, and may issue further guidance on the scope of the full proposal submissions of those encouraged.

A complete formal FWP in a single Portable Document Format (PDF) file must be submitted through the DOE ePMA system (<https://epma.doe.gov>) as an attachment. To identify that the FWP is responding to this program announcement, please fill in the following fields in the "ePMA Create Proposal Admin Information" screen as shown:

**Proposal Short Name:**

**Fiscal Year:**

**Proposal Reason:**

**Program Announcement Number:** Lab 06-13 \*

**Program announcement Title:** Mid-Scale Instrumentation, DOE Research Program Announcement \*

**Proposal Purpose:**

**Estimated Proposal Begin Date:**

**HQ Program Manager Organization:**

\* Please use the wording shown when filling in these fields to identify that the FWP is responding to this Program Announcement.

**In order to expedite the review process, please submit a CD and two copies of the proposal using the following, by U.S. Postal Service Express Mail, any commercial mail delivery service, or when hand-carried to:**

U.S. Department of Energy  
Office of Science  
Office of Basic Energy Sciences, SC-22.1  
19901 Germantown Road  
Germantown, MD 20874-1290  
ATTN: Program Announcement LAB 06-13

**FOR FURTHER INFORMATION CONTACT:** Helen M. Kerch., Office of Basic Energy Sciences, Materials Sciences and Engineering, SC-22.2, telephone: (301) 903-2346, E-mail:

helen.kerch@science.doe.gov or

Eric A. Rohlfing, Office of Basic Energy Sciences, Chemical Sciences, Geosciences and Energy Biosciences, SC-22.1, telephone: (301)903-8165,

E-mail: eric.rohlfing@science.doe.gov.

## **SUPPLEMENTARY INFORMATION:**

### **Program Funding**

It is anticipated that up to \$20 million annually will be available in FY07 for this Notice. Approximately \$10 million annually will be available for awards to support instrument upgrades, instrument replacements, and new instrumentation at the x-ray and neutron scattering facilities, and approximately \$10 million will be available for other mid-scale instrumentation, contingent upon the availability of appropriated funds. These funds will be competed among both academic and laboratory institutions, and the resulting instruments and beamlines will be made available to the entire U.S. scientific research community. Proposals will be considered that are relevant to the complete range of BES-supported research, including such areas as materials sciences, surface science, condensed matter physics, atomic and molecular science, chemical physics, polymers and soft materials, nanostructured materials, x-ray microscopy, tomography, ultrafast phenomena, interfacial studies, and imaging. Two types of awards will be considered: one-time acquisitions of equipment and multiyear beamline construction and instrument development projects. Requested personnel support should be limited to activities related to instrument development and construction. The number of awards and the range of funding will depend on the number of proposals received and selected for award.

### **Preproposal**

The preproposal should consist of a description of the instrumentation proposed for acquisition or development and a clear explanation of its relevance and impact on BES-supported research. The preproposal must include a cover sheet that identifies the institution, Principal Investigator name(s), address(es), telephone and fax number(s) and E-mail address(es), the title of the project, the identity of all project collaborators, and the yearly breakdown of the total budget request. A brief, one-page, vitae should be provided for each Principal Investigator. The preproposal should consist of a maximum of 3 pages of narrative (including text and figures) describing the research objectives, approaches to be taken, the institutional setting, and a description of any research partnership if appropriate.

### **Full Proposal**

The Department of Energy will accept Full Proposals by invitation only, based upon the evaluation of the preproposals. After receiving notification from DOE concerning successful preproposals, researchers may prepare formal proposals. The Project Description must not exceed 20 pages, including tables and figures, but exclusive of attachments. The proposal must contain an abstract or project summary, short vitae, and letters of intent from collaborators if appropriate. DOE is under no obligation to pay for any costs associated with the preparation or submission of proposals.

Full proposals adhering to DOE Field Work Proposal format (Reference DOE Order 412.1) are to be prepared and submitted consistent with policies of the investigator's laboratory and the local DOE Operations Office. Laboratories may submit proposals directly to the SC Program Office listed above. A copy should also be provided to the appropriate DOE Operations Office.

The instructions and format described below should be followed. You must reference Program Announcement LAB 06-13 on all submissions and inquiries about this program.

## **OFFICE OF SCIENCE GUIDE FOR PREPARATION OF SCIENTIFIC/TECHNICAL PROPOSALS TO BE SUBMITTED BY NATIONAL LABORATORIES**

Proposals from National Laboratories submitted to the Office of Science (SC) as a result of this program announcement will follow the Department of Energy Field Work Proposal process with additional information requested to allow for scientific/technical merit review. The following guidelines for content and format are intended to facilitate an understanding of the requirements necessary for SC to conduct a merit review of a proposal. Please follow the guidelines carefully, as deviations could be cause for declination of a proposal without merit review.

### **1. Evaluation Criteria**

Proposals will be subjected to formal merit review (peer review) and will be evaluated against the following criteria which are listed in descending order of importance:

Appropriateness of the proposed method or approach

Competency of the personnel and adequacy of the proposed resources

Reasonableness and appropriateness of the proposed budget

The Utility of the Proposed Instrumentation in Addressing Fundamental Science Issues Pertinent to the BES Research Portfolio.

The external peer reviewers are selected with regard to both their scientific expertise and the absence of conflict-of-interest issues. Non-federal reviewers may be used, and submission of a proposal constitutes agreement that this is acceptable to the investigator(s) and the submitting institution.

### **2. Summary of Proposal Contents**

- Field Work Proposal (FWP) Format (Reference DOE Order 5700.7C) (DOE ONLY)
- Proposal Cover Page
- Table of Contents
- Abstract
- Narrative
- Literature Cited

- Budget and Budget Explanation
- Other Support of Investigator(s)
- Biographical Sketch(es)
- Description of Facilities and Resources
- Appendix

## **2.1 Number of Copies to Submit**

A complete formal FWP in a single Portable Document Format (PDF) file must be submitted through the DOE ePMA system (<https://epma.doe.gov>) as an attachment. To identify that the FWP is responding to this program announcement, please fill in the following fields in the "ePMA Create Proposal Admin Information" screen as shown:

**Proposal Short Name:**

**Fiscal Year:**

**Proposal Reason:**

**Program Announcement Number:** Lab 06-13 \*

**Program announcement Title:** Mid-Scale Instrumentation, DOE Research Program Announcement \*

**Proposal Purpose:**

**Estimated Proposal Begin Date:**

**HQ Program Manager Organization:**

\* Please use the wording shown when filling in these fields to identify that the FWP is responding to this Program Announcement.

**In order to expedite the review process, please submit a CD and two copies of the proposal using the following, by U.S. Postal Service Express Mail, any commercial mail delivery service, or when hand-carried to:**

U.S. Department of Energy  
 Office of Science  
 Office of Basic Energy Sciences, SC-22.1  
 19901 Germantown Road  
 Germantown, MD 20874-1290  
 ATTN: Program Announcement LAB 06-13

## **3. Detailed Contents of the Proposal**

Proposals must be readily legible, when photocopied, and must conform to the following three requirements: the height of the letters must be no smaller than 10 point with at least 2 points of spacing between lines (leading); the type density must average no more than 17 characters per inch; the margins must be at least one-half inch on all sides. Figures, charts, tables, figure legends, etc., may include type smaller than these requirements so long as they are still fully legible.

### **3.1 Field Work Proposal Format (Reference DOE Order 5700.7C)** (DOE ONLY)

The Field Work Proposal (FWP) is to be prepared and submitted consistent with policies of the investigator's laboratory and the local DOE Operations Office. Additional information is also requested to allow for scientific/technical merit review. Laboratories may submit proposals directly to the SC Program office listed above. A copy should also be provided to the appropriate DOE operations office.

### **3.2 Proposal Cover Page**

The following proposal cover page information may be placed on plain paper. No form is required.

Title of proposed project  
SC Program announcement title  
Name of laboratory  
Name of principal investigator (PI)  
Position title of PI  
Mailing address of PI  
Telephone of PI  
Fax number of PI  
Electronic mail address of PI  
Name of official signing for laboratory\*  
Title of official  
Fax number of official  
Telephone of official  
Electronic mail address of official  
Requested funding for each year; total request  
Use of human subjects in proposed project:  
    If activities involving human subjects are not planned at any time during the proposed project period, state "No"; otherwise state "Yes", provide the IRB Approval date and Assurance of Compliance Number and include all necessary information with the proposal should human subjects be involved.  
Use of vertebrate animals in proposed project:  
    If activities involving vertebrate animals are not planned at any time during this project, state "No"; otherwise state "Yes" and provide the IACUC Approval date and Animal Welfare Assurance number from NIH and include all necessary information with the proposal.  
Signature of PI, date of signature  
Signature of official, date of signature\*

\*The signature certifies that personnel and facilities are available as stated in the proposal, if the project is funded.

### **3.3 Table of Contents**

Provide the initial page number for each of the sections of the proposal. Number pages consecutively at the bottom of each page throughout the proposal. Start each major section at the top of a new page. Do not use unnumbered pages and do not use suffices, such as 5a, 5b.

### 3.4 Abstract

Provide an abstract of no more than 250 words. Give the broad, long-term objectives and what the specific research proposed is intended to accomplish. State the hypotheses to be tested. Indicate how the proposed research addresses the SC scientific/technical area specifically described in this announcement.

### 3.5 Narrative

The narrative comprises the research plan for the project and is limited to 5 pages per task. It should contain the following subsections:

**Background and Significance:** Briefly sketch the background leading to the present proposal, critically evaluate existing knowledge, and specifically identify the gaps which the project is intended to fill. State concisely the importance of the research described in the proposal. Explain the relevance of the project to the research needs identified by the Office of Science. **The application must contain one paragraph addressing how the proposed research will address one or more of the four BES long-term program measures used by the Office of Management and Budget to rate the BES program annually. These measures may be found at [http://www.sc.doe.gov/bes/BES\\_PART\\_Performance\\_Measures.pdf](http://www.sc.doe.gov/bes/BES_PART_Performance_Measures.pdf). (This section was revised April 19, 2006.)**

Include references to relevant published literature, both to work of the investigators and to work done by other researchers.

**Preliminary Studies:** Use this section to provide an account of any preliminary studies that may be pertinent to the proposal. Include any other information that will help to establish the experience and competence of the investigators to pursue the proposed project. References to appropriate publications and manuscripts submitted or accepted for publication may be included.

**Research Design and Methods:** Describe the research design and the procedures to be used to accomplish the specific aims of the project. Describe new techniques and methodologies and explain the advantages over existing techniques and methodologies. As part of this section, provide a tentative sequence or timetable for the project.

**Subcontract or Consortium Arrangements:** If any portion of the project described under "Research Design and Methods" is to be done in collaboration with another institution, provide information on the institution and why it is to do the specific component of the project. Further information on any such arrangements is to be given in the sections "Budget and Budget Explanation", "Biographical Sketches", and "Description of Facilities and Resources".

### 3.6 Literature Cited

List all references cited in the narrative. Limit citations to current literature relevant to the proposed research. Information about each reference should be sufficient for it to be located by a reviewer of the proposal.

### **3.7 Budget and Budget Explanation**

A detailed budget is required for the entire project period, which normally will be three years, and for each fiscal year. It is preferred that DOE's budget page, Form 4620.1 be used for providing budget information\*. Modifications of categories are permissible to comply with institutional practices, for example with regard to overhead costs.

A written justification of each budget item is to follow the budget pages. For personnel this should take the form of a one-sentence statement of the role of the person in the project. Provide a detailed justification of the need for each item of permanent equipment. Explain each of the other direct costs in sufficient detail for reviewers to be able to judge the appropriateness of the amount requested.

Further instructions regarding the budget are given in section 4 of this guide.

\* Form 4620.1 is available at web site: <http://www.science.doe.gov/grants/Forms-E.html>.

### **3.8 Other Support of Investigators**

Other support is defined as all financial resources, whether Federal, non-Federal, commercial or institutional, available in direct support of an individual's research endeavors. Information on active and pending other support is required for all senior personnel, including investigators at collaborating institutions to be funded by a subcontract. For each item of other support, give the organization or agency, inclusive dates of the project or proposed project, annual funding, and level of effort devoted to the project.

### **3.9 Biographical Sketches**

This information is required for senior personnel at the laboratory submitting the proposal and at all subcontracting institutions. The biographical sketch is limited to a maximum of two pages for each investigator.

### **3.10 Description of Facilities and Resources**

Describe briefly the facilities to be used for the conduct of the proposed research. Indicate the performance sites and describe pertinent capabilities, including support facilities (such as machine shops) that will be used during the project. List the most important equipment items already available for the project and their pertinent capabilities. Include this information for each subcontracting institution, if any.

### **3.11 Appendix**

Include collated sets of all appendix materials with each copy of the proposal. Do not use the appendix to circumvent the page limitations of the proposal. Information should be included that may not be easily accessible to a reviewer.

Reviewers are not required to consider information in the Appendix, only that in the body of the proposal. Reviewers may not have time to read extensive appendix materials with the same care as they will read the proposal proper.

The appendix may contain the following items: up to five publications, manuscripts (accepted for publication), abstracts, patents, or other printed materials directly relevant to this project, but not generally available to the scientific community; and letters from investigators at other institutions stating their agreement to participate in the project (do not include letters of endorsement of the project).

#### **4. Detailed Instructions for the Budget**

(DOE Form 4620.1 "Budget Page" may be used)

##### **4.1 Salaries and Wages**

List the names of the principal investigator and other key personnel and the estimated number of person-months for which DOE funding is requested. Proposers should list the number of postdoctoral associates and other professional positions included in the proposal and indicate the number of full-time-equivalent (FTE) person-months and rate of pay (hourly, monthly or annually). For graduate and undergraduate students and all other personnel categories such as secretarial, clerical, technical, etc., show the total number of people needed in each job title and total salaries needed. Salaries requested must be consistent with the institution's regular practices. The budget explanation should define concisely the role of each position in the overall project.

##### **4.2 Equipment**

DOE defines equipment as "an item of tangible personal property that has a useful life of more than two years and an acquisition cost of \$25,000 or more." Special purpose equipment means equipment which is used only for research, scientific or other technical activities. Items of needed equipment should be individually listed by description and estimated cost, including tax, and adequately justified. Allowable items ordinarily will be limited to scientific equipment that is not already available for the conduct of the work. General purpose office equipment normally will not be considered eligible for support.

##### **4.3 Domestic Travel**

The type and extent of travel and its relation to the research should be specified. Funds may be requested for attendance at meetings and conferences, other travel associated with the work and subsistence. In order to qualify for support, attendance at meetings or conferences must enhance the investigator's capability to perform the research, plan extensions of it, or disseminate its results. Consultant's travel costs also may be requested.

#### **4.4 Foreign Travel**

Foreign travel is any travel outside Canada and the United States and its territories and possessions. Foreign travel may be approved only if it is directly related to project objectives.

#### **4.5 Other Direct Costs**

The budget should itemize other anticipated direct costs not included under the headings above, including materials and supplies, publication costs, computer services, and consultant services (which are discussed below). Other examples are: aircraft rental, space rental at research establishments away from the institution, minor building alterations, service charges, and fabrication of equipment or systems not available off-the-shelf. Reference books and periodicals may be charged to the project only if they are specifically related to the research.

##### **a. Materials and Supplies**

The budget should indicate in general terms the type of required expendable materials and supplies with their estimated costs. The breakdown should be more detailed when the cost is substantial.

##### **b. Publication Costs/Page Charges**

The budget may request funds for the costs of preparing and publishing the results of research, including costs of reports, reprints page charges, or other journal costs (except costs for prior or early publication), and necessary illustrations.

##### **c. Consultant Services**

Anticipated consultant services should be justified and information furnished on each individual's expertise, primary organizational affiliation, daily compensation rate and number of days expected service. Consultant's travel costs should be listed separately under travel in the budget.

##### **d. Computer Services**

The cost of computer services, including computer-based retrieval of scientific and technical information, may be requested. A justification based on the established computer service rates should be included.

##### **e. Subcontracts**

Subcontracts should be listed so that they can be properly evaluated. There should be an anticipated cost and an explanation of that cost for each subcontract. The total amount of each subcontract should also appear as a budget item.

#### **4.6 Indirect Costs**

Explain the basis for each overhead and indirect cost. Include the current rates.