User Access Program Overview

1. Objective

The objective of the Center for Nanoscale Materials (CNM) user program is to provide the user community with access to equipment, facilities, and personnel that support CNM's overall focus on nanoscale materials. The CNM makes access available to the international scientific community through a general user access program. Proposals are submitted through a web-based process.

The proposal submission, review, and allocation cycle occurs three times a year (roughly in March, July, and October), in synch with the Advanced Photon Source (APS) run cycles. The maximum length for a CNM proposal is one year; shorter requests are possible.

Proposals are peer-reviewed, rated, and time is allocated on the basis of these reviews by appropriate allocation committees.

2. Submission Guidelines

Before submitting a proposal, prospective users should first study the CNM scientific groups and identify the appropriate capabilities related to their research. Although capabilities are sorted by theme, users should be aware that many capabilities cut across theme lines and are intended to be used across the CNM scientific portfolio. Users are then encouraged to consult the appropriate CNM contact(s). These individuals can help prospective users to understand the CNM's capabilities as well as provide guidance in writing

proposals.

General users can submit two types of proposals:

1. A **general access** user proposal can be active for up to one year. Proposals are solicited via formal calls for proposals held three times per year. This process enables the CNM to objectively review, prioritize, and accept user proposals compete for access to limited capabilities and technical expertise.
2. Occasionally, a timely research opportunity may justify access to CNM between announced user proposal cycles. Such **"rapid access"** user proposals are submitted via the same system. They should clearly demonstrate a need for immediate access to conduct well-focused, short-term work (generally five days of equipment or capability access) with extremely high-impact potential. Continued access is obtained by conveying results of the expedited access in a general access user proposal submitted in response to the next available call for proposals.

Proposals that overlap more than one CNM theme area are encouraged. Proposals are submitted through a web-based process. First-time proposers first need to register in Argonne National Laboratory's National User Facilities Online Registration System to obtain system access. Receipt of this number can take one to two days during times of heavy use.

2.1 Proposal Content

Proposals include the following items:

1. Title.
2. Name and contact information for the principal investigator.
3. Name and contact information for collaborators. It is essential that we know all of the collaborators involved, whether they actually visit the site or not.
4. Description of the proposed experiment or program, including the instrument(s) or capabilities needed. Indicate and justify which capabilities will be used and the amount of time required for individual experiments. (On the proposal form, these items appear under separate tabs for Capabilities and Usage, respectively).
   For **Theory and Modeling proposals**, the process is the same. Complete the sections describing the science proposed (Abstract and Description of Research tabs). Then, on the Capabilities tab, check the appropriate capabilities under the Theory and Modeling section. Once one (or more) of these is checked, a series of questions will appear in the Usage tab, including how much time is needed, what codes are

needed, etc.

5. Scientific impact/justification for the proposed experiment. Clearly describe how the scientific community will benefit and outline anticipated contributions to the science and technology base.
6. Brief statement of any potential safety issues with required materials, processes, or procedures contained in the proposal.
7. Brief CV (maximum of two pages, in PDF format) of the principal investigator, including a short biography, description of prior work, and a list of publications most related to the proposal. Half-page biographies of up to two collaborators may also be appended. Provide enough information to demonstrate an ability to successfully perform the proposed work.
8. Other supporting material, as needed (in PDF format). Such supplemental information is not meant to substitute for actual text in the proposal form itself.

3. Proposal Review Process

Proposals are directed first to the CNM for an internal feasibility review by instrument scientists. If a proposal is determined to be feasible and can be safely executed at the CNM, it will be submitted to the Proposal Evaluation Board (PEB) for scientific evaluation. If a proposal is not considered feasible, it will be returned to the proposer with appropriate comments. Investigators are encouraged to resubmit revised proposals.

3.1 Proposal Evaluation Board

The PEB, an external panel of peer reviewers, will evaluate proposals. The rank order of scores generated by the PEB will be the primary input in allocating facility access to users. The PEB will also provide feedback to the investigators on the quality of their proposals and, where relevant, perceived weaknesses. Appointment to the PEB is made by the CNM Director or designate on the basis of expertise and nominations from the user community.

3.2 Evaluation Criteria

The PEB uses criteria endorsed by the International Union of Pure and Applied Physics to evaluate user proposals:

1. Scientific merit,
2. Technical feasibility,
3. Capability of the experimental group, and
4. Availability of the required resources.

The principal evaluation criterion will be scientific merit. Proposals that

clearly require the unique capabilities of CNM will be given higher priority. Criteria may also be supplemented, for example to justify the need for special equipment or to satisfy safety and environmental concerns. Special considerations will be given to encourage and support first-time users so they can compete effectively in the peer review system.

3.3 Rating Process

Proposal reviewers will evaluate each proposal according to the criteria described above and assign a numerical rating. In a subsequent proposal cycle, unsuccessful proposers can submit a new or revised proposal that addresses PEB comments in order to improve the rating and thus improve chances of receiving facility time.

Proposals are rated on a scale of 1 to 5 (1 being the highest rating and 5 being the lowest). The user receives notification of the rating and comments to improve the rating if needed. Proposals are rated according to the scale below:

1. **Extraordinary**: The proposal involves highly innovative research of great importance. It is a project that will either launch a new direction for nanoscience research or will clearly impact one of the outstanding problems in the field of nanoscience. A nanoscience facility is essential to perform the research. The experimenters have an excellent track record, and the results obtained are very likely to have high impact (e.g., to be published in a leading journal).
2. **Excellent**: The proposal presents a well-conceived, original, research project with a strong potential for making an important contribution to the field of nanoscience research. A nanoscience facility is essential to perform the research. The experimenters have a good track record, and the results obtained are likely to have high impact.
3. **Good**: The proposed work is an extension of a nanoscience project that has already had significant impact. Although not groundbreaking, it is near cutting-edge and is likely to produce significant results. The need for a nanoscience facility is evident.
4. **Fair**: A nanoscience facility is required and the science is interesting, but the proposal describes routine measurements in a well-worked area of research. The results from the research, although useful, are not likely to have a high impact.
5. **Poor**: Serious doubt exists regarding the potential impact and/or feasibility of the proposed project, or there is no evident need for the use of a nanoscience facility.

3.4 Aging Process

Due to ever-increasing demand for limited resources, proposals are ranked by composite PEB score and awarded until all available time is allocated. New proposals that are not allocated during a call for proposals (CFP) cycle will remain active for two subsequent proposal calls, each time receiving an improved PEB composite score by .2 points. There remains the option of submitting a new proposal to any upcoming CFP cycle taking into account reviewer and feasibility comments.

4. User Modes

The CNM program invites proposals from the external scientific community, including:

1. **General User Access**: General users are individuals or groups who need access to the facility to carry out their research using existing equipment. General Users apply for access by submission of a proposal as described in Section 2. Individual and group proposals, including collaborative proposals with CNM staff, are encouraged.
2. **Partner User Access**: Partners are individuals or groups who not only carry out research at the CNM but also enhance the capabilities or contribute to the operation of the Center. Typically they develop the facility instrumentation in some way, bringing outside financial and/or intellectual capital into the evolution of the CNM, or contribute to the operation of equipment and facilities. These contributions must be made available to the general users and so benefit them as well as the facility. In recognition of their investment of either resources or intellectual capital and in order to facilitate and encourage their involvement, Partners may be allocated limited access to one or more facilities over a period of several years, with the possibility of renewal. Partner scientific programs are subject to the same peer review process as general users.

5. Proprietary and Nonproprietary Research

Users of the facilities include academic, industrial, and government scientists and engineers. The vast majority of user research is expected to be in the public domain and thus disseminated by publication in the open literature; there is no cost to the user to access CNM capabilities to perform non-proprietary research.

Some percentage of the time available on CNM capabilities may be allocated for proprietary research that uses these unique facilities to benefit the national

economy. Therefore, those conducting proprietary research may access the facility as users. Full-cost recovery is obtained for proprietary research. Agreements are in place to secure appropriate intellectual property control for proprietary users to permit them to exploit their experimental results. The proposal submission and review mechanism is the same for proprietary research. The submitter is encouraged to include enough detail, without including any proprietary information, to ensure a meaningful technical evaluation of the work by two external proposal evaluation board members.

6. User Access Allocation, Scheduling, and Recording

CNM management has ultimate responsibility and accountability for effective and efficient use of time on all equipment and facilities that are part of the user program. Allocation of access to equipment and facilities for users is done on the basis of the rankings provided by the PEB. Once access has been allocated, the user will be contacted to schedule the experiment. Time allocation and scheduling of user access is centralized in the CNM User Office using expert input from CNM staff and the theme contacts. Site access to Argonne National Laboratory is controlled, and CNM users are subject to the entrance requirements of the Laboratory, as indicated in its National User Facilities Online Registration System. For extended visits, all CNM users have access to onsite housing at the Argonne Guest House.

6.1 Instrument Scheduling Policy

Many of the CNM instruments have online scheduling calendars that your scientific contact will instruct you on using at the appropriate time. The CNM must also track the time that is actually utilized in addition to what is scheduled. Since CNM facilities are highly subscribed, take care to sign up for only what is necessary to complete your experiment.

6.2 Instrument Scheduling Late Policy

You are obliged to notify your scientific contact if you are going to be late. The CNM reserves the right to reassign the time if you are more than 40 minutes late for a scheduled block of longer than 3 hours, or 20 minutes late for a scheduled block of less than 3 hours. When you notify your scientific contact that you will be late, suitable adjustments and allowances may be possible at their discretion.

7. Safety, Orientation, and Training

Users will adhere to all hazard control requirements, as specified by Argonne

National Laboratory and the CNM safety panel. The necessary orientation, training, and operating procedures is assessed on a case-by-case basis. An experimental safety review will be conducted that considers the materials, processes, and procedures required for safe and effective conduct of the proposed experiment, including any equipment or facility assembly or temporary relocation of instruments and materials from the user's laboratory.

Current limitations on samples and reagents include those requiring Biosafety Level 3 or 4 and radioactive materials; neither protocols nor infrastructure are in place for these materials at the present time.

8. Amendments and Renewals

Amendments: Within a proposal's lifetime (maximum one year), extension of the research beyond what is outlined in the proposal can be accommodated if the additional work does not become sufficiently complex as to require significant additional resources, or if the scientific scope does not deviate significantly. It is the scientific contact's responsibility to determine if the approved thresholds have not been crossed and to recommend to the user and the User Office that an amendment to the existing proposal is warranted (e.g., a new capability might be added). Any change that introduces new hazards must be reviewed by the ESH Manager.

Renewals: All proposals expire after the one-year maximum or after specific allocation(s) of time, whichever comes first. A new proposal submission is required to request additional time on a given project. Progress on the previous proposal(s) is reported as well as objectives for the forthcoming year, and the PEB is notified by the User Office to review these aspects for an extension.

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