



2020 Faculty and Student Team Research Award at NSF's ChemMatCARS (FaSTRAC)

CALL FOR PROPOSALS

NSF's ChemMatCARS (<https://chemmatcars.uchicago.edu/>) at the Advanced Photon Source (APS) of Argonne National Laboratory (ANL) is sponsoring summer research experiences for faculty and students from Minority Serving Institutions (MSIs) such as Historically Black Colleges and Universities (HBCUs), Hispanic-Serving Institutions (HSIs), Tribal Colleges and Universities (TCUs), Alaska Native-Serving Institutions and Native Hawaiian-Serving Institutions (ANNHSIs) and Asian American and Native American Pacific Islander Serving Institutions (AANAPISIs). The purpose of our program is to provide MSI faculty members and their research students with hands-on experience and one-on-one training, thereby increasing their use of NSF's ChemMatCARS facility and establishing long-term collaborations between scientists in MSIs and NSF's ChemMatCARS (<https://chemmatcars.uchicago.edu/education-and-outreach/>).

Interested faculty should submit a proposal by **December 20, 2019, 5:00 p.m. CST**. Selected faculty and undergraduate or graduate student teams will perform research and work with NSF's ChemMatCARS research staff for a period of 2 to 6 weeks as described below.

Application Deadline: December 20, 2019, 5:00 p.m. CST

Eligibility and Benefits

The program is open to faculty-student teams, which consist of a full-time faculty member and one of their research students, from post-secondary institutions designated by the federal government as MSIs. The program will sponsor round-trip transportation to ANL, on-site lodging, a stipend of \$3,000 and \$2,200 per month, respectively, for the faculty member and the student, as well as a maximum allowance for materials and supplies of \$2,000.

Duration and Location

The successful applicant will be hosted by NSF's ChemMatCARS for a continuous period of time during the months of **June or July 2020**, with the exact time duration and dates to be negotiated following proposal acceptance. Faculty members are supported for up to 4 weeks and students are supported for up to 6 weeks.

Research Areas

NSF's ChemMatCARS is the nation's premier facility for synchrotron X-ray studies of advanced small-molecule chemical and materials crystallography (<https://chemmatcars.uchicago.edu/experimental-facility/experimental-techniques/advanced-crystallography/>) and liquid surface/interface scattering (<https://chemmatcars.uchicago.edu/experimental-facility/experimental-techniques/liquid-surface-x-ray-scattering/>), and will accept research proposals in both areas.

For advanced crystallography, research project proposals should focus on high precision crystallography to study microcrystals, charge (i.e., electron) densities, bonding, resonant diffraction, and/or high-pressure single crystal diffraction for structure elucidation in the areas of chemistry or materials science. Applicants may be novices in crystallography with synthetic projects that would benefit from crystallographic characterization. Alternatively, applicants may have advanced knowledge of diffraction methods and crystallography and require complex crystallography experiments to advance their research.

For liquid surface X-ray scattering, research project proposals should focus on the study of static and dynamic assembly, recognition and reactivity of molecules and nanoparticles at the air-water interface using X-ray reflectivity, grazing incident X-ray diffraction and surface fluorescence spectroscopy.

Application Documents

- Curriculum vitae
- Letter of support from department chair or dean
- Proposal for research project (*1-2 pages*)
Applicants should describe the research project they would like to pursue in collaboration with NSF's ChemMatCARS beamline staff. Anticipated outcomes should be described and literature citations provided.
- Statement about career advancement (*max. 1 page*)
Applicants should explain how participation in the program will advance their professional career, specifically, which new experiences and skill sets will benefit their research and teaching at their home institution. Additionally, they should describe how the summer research experience may lead to an ongoing collaboration and research partnership with NSF's ChemMatCARS.
- Information on participating student
Information about the student member of the faculty-student team should be provided, including a paragraph on how the student will be involved in the proposed research, as well as the student's CV and GPA.
- Proposed duration of visit to NSF's ChemMatCARS for both faculty member and student.
- Budget and budget justification for materials and supplies (*max. 1 page*)

Selection and Notification

FaSTRAC fellows will be selected based upon research match with the capabilities of the beamline, qualifications of the candidate, and the potential for establishing continuing research collaborations.

A committee of NSF's ChemMatCARS research staff and other experts will review applications. Applicants will be notified of their proposal status **by February 1, 2020**. Subsequently, arrangements for institutional agreements (<https://www1.aps.anl.gov/Users-Information/Legal-Financial/Argonne-User-Facility-Agreements>) between ANL and the MSI will need to be made if not already in place.

Inquiries and Application Submission

For general program information, application submission, and liquid surface X-ray scattering, please contact **Prof. Binhua Lin**, Executive Director of ChemMatCARS, lin@cars.uchicago.edu, (630) 252-0463.

The lead contact for advanced crystallography experiments is

Prof. Yu-Sheng Chen, yschen@cars.uchicago.edu, (630) 252-0471.

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