Post-Doc: Equipment Development in High Energy X-Ray Diffraction
Purdue University

Job Title	Post-Doc: Equipment Development in High Energy X-Ray Diffraction
Department	School of Aeronautics and Astronautics https://engineering.purdue.edu/AAE
Institution	Purdue University West Lafayette, Indiana
Date Posted	Sep. 15, 2017
Application Deadline	Open until filled
Position Start Date	Available Immediately
Job Categories	Post-Doc
Academic Field(s)	Structural Engineering Mechanical Engineering Material/Metallurgy Engineering Physics Engineering Mechanics Aerospace/Aeronautical/Astronautics Engineering - Other
Job Website	https://www1.aps.anl.gov
Apply By Email	msangid@purdue.edu

Job Description

The School of Aeronautics and Astronautics at Purdue University and the Department of Mechanical Engineering at the University of Utah invite applications for a National Science Foundation funded post-doctoral position starting as soon as possible. The goal of the two year project is to build a new instrument at the Advanced Photon Source at Argonne National Laboratory that will be a second generation, high-throughput High Energy Diffraction Microscope. The new high-throughput microscope

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will enable fundamental explorations of microstructure among a wide variety of polycrystalline materials. Potential areas of study enabled by the new instrument include, but are not limited to, microstructure evolution during in-situ thermal loading, grain-scale characterization of cellular metals and lattice structures, progressive damage in structural materials, and martensitic phase transformations and plasticity. The individual filling this position will be expected to lead the hardware installation and computer interfacing effort and will work with a second post-doc who will lead data pipelining and reduction software implementation. The instrument is to be a highly automated (essentially a robotic) system that collects large numbers of two-dimensional images of diffraction patterns as various mechanical degrees of freedom are moved in precisely calibrated, monitored, and timed ways. Large volumes of data (multiple terabytes per week) must be pipelined to data reduction codes in real time. Control and data handling software will be written in Python operating on Linux workstations. Experience with x-ray diffraction, particularly at large synchrotron radiation facilities, and microstructure science are a plus. A PhD specializing in the materials sciences or physics and experience with complex instrumentation is expected.

The consortium building the instrument is led by R.M. Suter at Carnegie Mellon University, M. Sangid at Purdue University, A.D. Spear at University of Utah, and A.P. Stebner at Colorado School of Mines. The second post-doc on the project (in charge of the software development) will be hired through Carnegie Mellon University and Colorado School of Mines. Both post-docs will join vibrant on-going research groups and will have the opportunity to collaborate with all consortium members.

The project is currently funded so the start date is as soon as practical. The position will be located at Argonne National Laboratory, just outside of Chicago, IL, with minor travel expected to the host universities. Candidates should submit a curriculum vitae, publication list, and a statement of research plans. Upon request, the candidate should arrange for three letters of recommendation to be sent.

EEO/AA Policy

Purdue University is an EOE/AA employer. All individuals, including minorities, women, individuals with disabilities, and veterans are encouraged to apply.

Contact Information

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