Postdoc in Ultrafast X-ray Science: Ion Dynamics and Reactivity in Solution

The Physical Sciences Division of the Pacific Northwest National Laboratory (PNNL) is seeking a postdoctoral fellow interested in understanding the fundamental interactions, reactivity, and dynamics of ions in solutions by developing and utilizing advanced X-ray scattering methods, in particular X-ray Photon Correlation Spectroscopy (XPCS). The postdoc will be based at the PULSE Institute of the SLAC National Accelerator Laboratory, in Menlo Park (CA).

The successful candidate will investigate challenging molecular-scale science questions, including ion-solvent and ion-ion interactions and dynamics, the mechanisms of charge and proton transfer in molecules, and the spontaneous collective fluctuations that drive chemical reactivity in liquids. You will conduct split-pulse XPCS and related experiments using the LCLS X-ray free electron laser (XFEL) at the SLAC National Accelerator Laboratory and other XFELs and synchrotron facilities around the world. You will be mentored by Elisa Biasin and collaborate with other senior investigators in a multi-institutional team, including researchers at PNNL (e.g., Shawn Kathman, Greg Schenter, Niri Govind), and SLAC PULSE Institute (e.g., Amy Cordones).

The Ideal Candidate: If you are ready to test your talents, train in experimental ultrafast chemical dynamics and X-ray science, and hone your skills at national laboratories widely recognized for their work in the physical sciences, we want to connect with you. We encourage all qualified applicants to apply; you do not need to meet all the Preferred Qualifications to be considered.

How to apply:
Please apply at the following link: https://careers.pnnl.gov/jobs/12185?lang=en-us
Please include a cover letter with your CV describing your research interests and preferred start date. Please also provide the names of at least two references who could, upon request, provide a letter of recommendation.

What you will do:

- Propose, lead, and participate in X-ray experiments at large-scale X-ray light source facilities to investigate the structure and dynamics of ionic solutions.
- Perform extensive analysis of complex datasets, including learning and developing the computational tools and analysis codes necessary to extract structural and dynamical information from X-ray scattering experiments.
- Interpret experimental data through comparison with state-of-the-art theoretical calculations, in close collaboration with members of the theory team.
- Work independently, take initiative, and contribute effectively to collaborative, interdisciplinary research projects.
- Prepare and publish manuscripts in peer-reviewed scientific journals.
- Become an integral member of PNNL and SLAC fundamental chemical physics research teams, taking advantage of world-class expertise and capabilities to advance your research. Interact, communicate, and problem-solve with researchers across the multi-institutional collaboration.
- Present research findings at scientific conferences, workshops, and project/program review meetings.

Qualifications

Minimum Qualifications:

- Candidates must have received a PhD within the past five years (60 months) or within the next 8 months from an accredited college or university.

Preferred Qualifications:

- PhD in Physical Chemistry, Physics, Materials Science, or a related field.
- Experience with XPCS or X-ray scattering methods at synchrotrons or XFELs and/or experience with tabletop ultrafast spectroscopy methods.
- Strong ability to analyze complex datasets and develop appropriate models, working closely with theorists; familiarity with coding languages such as Python and/or Julia.
- Strong critical-thinking and problem-solving skills, with the ability to take initiative, identify new research opportunities, and independently develop solutions to challenging scientific problems.
- Excellent written and verbal communication skills.
- Strong leadership abilities and the ability to work effectively as part of an interdisciplinary team of scientists across multiple institutions.
- Ability to travel from SLAC to PNNL for regular meetings with PNNL researchers, and to synchrotron and XFEL facilities around the world to perform experiments.