Postdoctoral Associate – X-ray characterization of photovoltaic materials to enable inverse design for long lasting thin film PV modules

The Stanford Synchrotron Radiation Lightsource (SSRL), a directorate of the SLAC National Accelerator Laboratory, has an opening for a Postdoctoral Scholar to utilize x-ray scattering and spectroscopy to characterize inorganic and hybrid organic-inorganic photovoltaic (PV) materials. The focus of the project is to characterize, with high fidelity, the heterogeneity of structure present in PV absorber materials. With a focus on how the details of the structure (i.e. phase partitioning, strain, and crystalline texture) are related to the details of the device processing and operating conditions and environment. The broad goal of this research is to improve the lifetime of PV modules through inverse design of the processing conditions and active layer chemistry. The postdoctoral appointment will involve:

- Characterization of PV materials through a combination of x-ray scattering and x-ray spectroscopy.
- The development of operando approaches to characterize PV degradation pathways, with a focus on elucidating the chemical mechanisms associated with these degredation routes
- Collaborating with our data science team to develop high throughput analysis pipeline to enable full refinements of x-ray diffraction data resulting from in-situ/operando measurements
- Collaboration with National Laboratory, industry and academic partners

In addition to the tasks outlined above, there will also be room for the postdoctoral scholar to bring their unique perspective to this project and pursue research focused on the development and utilization of x-ray methods for the elucidation of processing-structure-property relationships for thin film deposition techniques.

Basic Qualifications:

- A Ph.D. in a physics, chemistry, materials science or chemical engineering
- Experience with synchrotron x-ray methods development
- Experience with instrumental design, development and deployment
- Experience with iterative, test driven development
- Good interpersonal skills and strong communication skills
- Ability to participate in a team
- Experience working within large inter-university collaborations is strongly desired.

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