

## Postdoctoral Scholar – CO<sub>2</sub> Direct Air Capture

### Position Overview:

The Stanford Synchrotron Radiation Lightsource (SSRL), a directorate of SLAC National Accelerator Laboratory, and research facility operated by Stanford University, seeks a Ph.D. Postdoctoral Scholar with research interests and hands-on experience in the application of *in situ* synchrotron X-ray scattering and spectroscopy techniques to identify structural changes occurring in aminopolymers used for CO<sub>2</sub> direct air capture (DAC) processes.

One of the primary purposes of the postdoctoral scholar position is to design and perform measurements as well as analyze data from X-ray scattering and spectroscopy on polyethylene imine (PEI)-porous oxide composites under variable environmental conditions. *In situ* measurements will largely focus the effects of temperature and humidity on localized and bulk polymer structures, which have a profound impact on CO<sub>2</sub> uptake and durability. This role will support on-going collaborations between SLAC and NREL and will collaborate with the broader project team which includes Lawrence Livermore National Laboratory and Georgia Institute of Technology.

The postdoc will work within a rich scientific environment at SLAC and Stanford University and will have opportunities to cross-train on related projects in polymer chemistry, energy storage, and X-ray capability development. They will have opportunities to publish lead-author manuscripts and present results at conferences and project meetings, allowing them to build a career in polymer sciences and/or carbon capture. Depending on the candidate's interest and career goals, they will also have opportunities to contribute to funding proposals and develop skills necessary for writing grants.

Applicants must provide evidence of either a recently completed Ph.D. degree or confirmation of completion of the Ph.D. degree requirements before starting the position. Applicants should also include a cover letter, a curriculum vitae, a list of publications, and names of three references for letters of recommendation with the application.

The postdoctoral scholar position will be supported by a multi-laboratory DOE-BES funded project. This is a two-year appointment beginning Fall 2023, contingent on the availability of funding, with the possibility of an extension for one additional year. Interested candidates should contact Nicholas Strange, [nstrange@slac.stanford.edu](mailto:nstrange@slac.stanford.edu), with "CO<sub>2</sub> DAC postdoctoral scholar application" in the subject heading.

### Your specific responsibilities include:

- Work with the SLAC PI and project team to design, execute, and analyze data from X-ray scattering and spectroscopy measurements for identifying structural and chemical degradation mechanisms of aminopolymer-porous oxide composites used for CO<sub>2</sub> DAC
- Develop beam time proposals for SSRL in addition to other DOE-BES user facilities
- Work with the SLAC PI and engineers to design and fabricate new sample environments to aid in the understanding of structural and chemical degradation of aminopolymer-porous oxide composites
- Provide regular reports (written and oral) on analysis of data as feedback to the project team
- Participate in weekly meetings with SSRL postdocs and graduate students to present new results, share experiences, and facilitate scientific discussions among early career scientists across the directorate

### To be successful in this position you will bring:

- Ph.D. in physics, chemistry, materials sciences, or related fields

- Strong experience with X-ray or neutron scattering techniques. Additional experience with X-ray spectroscopy is preferred.
- A solid background in characterization theory and extensive experience with the use, development, and/or maintenance and analysis of data acquisition.
- Strong analytical and computation skills, including the use of python and/or LabView.
- Experience performing X-ray/neutron measurements with *in situ* or *operando* sample environments.
- Excellent verbal and written communication skills and the ability to convey complex technical concepts.
- Ability to work and communicate effectively with a diverse population.

This position is 100% on site.

Interested candidates should send their CV to Dr. Nicholas Strange [Nstrange@slac.stanford.edu](mailto:Nstrange@slac.stanford.edu)