

DuraMAT Postdoctoral Position for Solar Module Materials Reliability

The Schelhas Group (sites.slac.stanford.edu/schelhas/) in the Applied Energy Programs, a division of the SLAC National Accelerator Laboratory and Stanford University seeks a Postdoctoral Scholar in Chemical or Materials Sciences.

The position is part of DuraMAT (www.duraMAT.org)—or Durable Module Materials—Consortium which brings together the national lab and university research infrastructure with the photovoltaic (PV) and supply-chain industries for a grand goal: to discover, develop, de-risk, and enable the commercialization of new materials and designs for PV modules—with the potential for a leveled cost of electricity of less than 3 cents per kilowatt-hour. The National Renewable Energy Laboratory, Sandia National Laboratory, and Lawrence Berkeley National Laboratory are participating in this effort along with academic and industry partners. The Postdoc will be one of a handful of DuraMAT Postdocs located at each of these National Labs.

This 1-3 year postdoctoral position will involve the use of synchrotron X-ray based scattering techniques, along with conventional laboratory characterization techniques, such as FTIR, XPS, AFM and SEM to investigate the structure property relationships in solar module materials, including but not limited to encapsulants, backsheets, and metallization. An example includes studying the failure mechanisms at the encapsulant cell interface after accelerated ageing, with a focus on ionizing processes, such as UV and high voltage. The Postdoc will be responsible for determining both the structural and chemical changes occurring at this interface. This work aims to identify the degradation pathways and ultimately provide a route to mitigate these effects. Another aspect of this work is to help validate accelerated testing protocols. This highly collaborative project will leverage state-of-the-art accelerated testing, materials characterization, simulation, and data analytics to drive the establishment of best practices and validation of accelerated testing protocols for the PV industry. This project will specifically investigate the correlation between different accelerated testing protocols and fielded modules by characterizing changes in the backsheet material properties.

Additionally, the postdoc will assist in instrumentation design and development of new capabilities focused on materials characterization and forensics, such as *in-situ* humidity testing, and will include the developing techniques to measure mini-modules when possible. The position is highly collaborative and will involve coordinating research efforts between collaborators from industry, universities, and national labs.

Required qualifications:

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

Preferred Qualifications:

- Experience with the characterization of photovoltaic materials is desired.
- Some familiarity with accelerated testing protocols for PV materials.
- Experience with instrumentation design and development.
- Willingness to learn and bridge knowledge/experience gaps
- Ability to work independently and in a team environment.
- Effective communication with a diverse population and good interpersonal skills are essential
- Effective written and verbal communication skills.

Please send a letter with CV and list of publications to Laura Schelhas, schelhas@slac.stanford.edu