X-ray Characterization of Li Plating in Li-ion Batteries

The Stanford Synchrotron Radiation Lightsource (SSRL), a Directorate of the SLAC National Accelerator Laboratory, Stanford University seeks a Ph.D. Postdoctoral Scholar with research interest and experience in X-ray characterization of Li-ion batteries (LiBs). This position will involve in situ X-ray scattering and diffractive imaging aimed at understanding the conditions for Li plating in LiBs. This position will be part of a larger DOE effort at developing fast charging LiBs, involving Stanford, SLAC, the Argonne National Laboratory (ANL), the National Renewable Energy Laboratory (NREL), and Idaho National Laboratory (INL).

Fast charging is a critical challenge in ensuring mass adoption of electric vehicles. There are numerous challenges that limit such fast charging at the cell level, with Li plating as the primary culprit. The project will develop and use high energy X-ray diffraction and X-ray diffractive imaging to detect the presence of Li metal in Li-ion pouch cells. From this, the conditions that lead to Li plating will be understood and mitigation approaches can be developed. There will be a series of in situ (after charge) and operando (during charge) investigations. This is a two-year appointment, with a possible extension to three years, available to begin in October.

Qualifications:

- Ph.D. in physics, materials sciences, chemistry, or related fields.
- experience with synchrotron X-ray scattering, or X-ray imaging, or electron microscopy
- experience with Li-ion batteries, especially pouch cells
- Strong experimental, analytical and computation skills.
- effective written and verbal communication skills.
- ability to work and communicate effectively with a diverse population; good interpersonal skills are essential.
- ability to work independently and in a team environment.

Please send a letter with CV and list of publications to Mike Toney -mftoney@slac.stanford.edu. See for more information - https://www-ssrl.slac.stanford.edu/toneygroup/