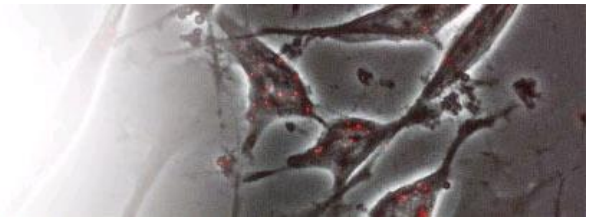
UCLA Engineering

Chemical and Biomolecular Engineering



SEMINARS IN CHEMICAL AND BIOMOLECULAR ENGINEERING

Friday, Feb. 22, 2019
10:00am - 11:00am
Boelter Hall 3400

Yuzhang Li

Postdoctoral Fellow
Chemical Engineering | Materials Science and Engineering
Stanford University

"Imagining, building, and understanding the next-generation battery"

Electrochemical energy conversion and storage is critical for vehicle electrification and storing clean energy from intermittent sources (i.e. wind, solar) on the grid. Towards these goals, my work as a doctoral student has encompassed the broad spectrum of stages necessary for technological innovation: (1) developing new tools to discover fundamental understandings, (2) designing and synthesizing unique materials to address intrinsic failure modes, and (3) patenting the technology for real world applications.

In this talk, I will first discuss a graphene cage design strategy to stabilize the silicon anode for high-energy Li-ion battery chemistries. Next, I will introduce the powerful cryogenic-electron microscopy technique that we have pioneered for atomic-resolution studies on sensitive and reactive battery materials. Using this technique, new discoveries at the nanoscale are correlated with macroscopic battery performance, further expanding our understanding of battery failure mechanisms and providing insight for future materials design.

Yuzhang Li is a postdoctoral fellow working with Prof. Yi Cui on next-generation energy storage technologies. His research approach seeks to tackle problems from both an applied and fundamental perspective, which is necessary for the development of high energy density batteries. Throughout his PhD, he has developed an advanced materials design for Li-ion batteries (Nature Energy 1, 15029, 2016) and pioneered the cryogenic-electron microscopy technique to study the atomic structure of battery materials (Science 358, 506, 2017). His work has been highlighted by multiple media outlets (including Forbes magazine, ABC7 news, SLAC), and recognized by several awards (including ECS Daniel Cubicciotti award, MRS graduate student gold award).

Yuzhang is supported by the Intelligence Community Postdoctoral Fellowship. He received his B.S. in Chemical Engineering from UC Berkeley and his Ph.D. in Materials Science and Engineering from Stanford University.