

Faculty Name:

Yuan Yang

Faculty Email:

yy2664@columbia.edu

Lab:

Yang's Lab

Project Title:

Advanced Anode-free Lithium Batteries with High Energy Density

Description:

Anode-free lithium metal battery uses a lithium-containing cathode (e.g. NCA, NCM) and a Cu foil as the current collector for the anode. Such design avoids the use of air-sensitive lithium anode and has a high energy density. This project targets to understand parameters that control lithium deposition/stripping and cell performance in such anode-free batteries, and develop new gel polymer electrolytes to enhance cycling performance.

The student will particularly design and synthesize metal organic framework (MOF) or covalent organic framework (COF) based coating on Cu foil to form a mechanically rigid layer to suppress the growth of uneven lithium metal and enhance the reversibility of lithium metal anode, and thus the cycle life of batteries. The student will be in charge of chemical synthesis, electrode coating and battery testing.

Location of Research:

On-Site

of hrs/week:

20

Department/Program:

Applied Physics and Applied Math

Eligibility:

MS

To apply, please contact:

yy2664@columbia.edu