Inorganic/Physical Seminar

Monday, October 4, 4pm

Virtual Event

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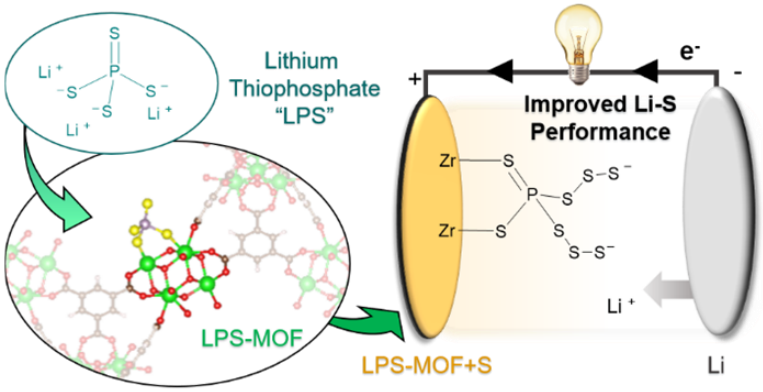
"Designing Functional Sites in Porous Materials for Energy Storage and Conversion"

Abstract: Despite their high theoretical specific energy of 2,600 Wh kg-1, the commercialization of Li-S devices is hindered by irreversible capacity loss from the dissolution of polysulfide intermediates in the electrolyte solution. We report novel strategies to design reactive sites for polysulfide adsorption in metal-organic frameworks (MOFs) to improve capacity retention and ionic conductivity. Incorporation of redox-active moieties in the framework further enable fast charge and discharge capabilities. These design elements ultimately enhance the charge storage ability and cycle life of the batteries. In addition, we will present new methods to probe the electrode-electrolyte interfaces in electrocatalysis using advanced electrochemical techniques such as in-situ vibrational spectroscopy and electrochemical impedance spectroscopy. The ubiquity of surfactants and carbon supports in catalysis warrants a closer examination on their influence on the electrode-electrolyte interface during carbon dioxide reduction. New insights on the impact of molecular additives and carbonaceous materials on product formation and Faradaic efficiency in electrocatalytic carbon conversion will be discussed.



Zoom Link: https://rochester.zoom.us/j/92262600791

Website: https://events.rochester.edu/event/chemistry_inorganic-physical_seminar_thoi

Host: Prof. William Jones • Email: william.jones@rochester.edu