Contribution ID: **6** Type: **Invited Speaker Abstract**

Novel Metal Complex Catholytes for Aqueous Redox Flow Batteries

Redox flow batteries (RFBs) represent a compelling pathway towards innovative electrochemical energy storage solutions, particularly for large-scale grid energy storage. However, the current active materials utilized in commercially available RFBs present challenges due to their inherent toxicity and high cost. Thus, the development of next-generation RFBs requires earth-abundant active materials with high solubility, suitable redox potential, and electrochemical stability. Organic and hybrid materials are viable prospects for the development of environmentally friendly active materials for RFBs. Nevertheless, these candidates continue to encounter challenges, including low solubility and pronounced crossover, particularly in the role of catholyte materials. In this talk, we will discuss the strategic approach employed in the design of novel metal complex catholyte materials for use as catholyte in aqueous RFBs. By disrupting the symmetry of the metal complex materials, we can concurrently address the solubility and crossover issues. Furthermore, the scattering experiments have demonstrated the formation of self-assembled particles within the solution, thus revealing a novel method to design active materials with enhanced solubility in an aqueous solution.

Topic

Energy Storage

Primary author: ZHU, Yu (University of Akron)

Presenter: ZHU, Yu (University of Akron)