Materials selection and chemistry development for novel redox flow batteries

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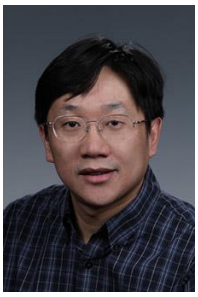
Redox flow battery technologies are leading candidates for stationary energy storage, which provide a potentially cost-effective approach that would be beneficial for renewable energy integration, balancing the mismatch between supply and demand, as well as improving the overall reliability and efficiency of the grid, etc. Until very recently, most research in this area has focused on transition-metal redox species, with not only limit energy density due to solubility issue, but also in some cases increase cost. Materials selection and chemistry development are therefore of critical importance to expand the chemical space for the flow battery technology for future flow battery technologies. This presentation will discuss new redox chemistries developed at PNNL.

Speaker bio:



Dr. Wei Wang is a senior scientist at Pacific Northwest National Laboratory (PNNL). He is currently the thrust lead on stationary energy storage R&D with a diverse portfolio including redox flow, lithium-ion, and sodium-ion batteries, as well as hydrogen production technologies. His research spans from materials synthesis, electrochemistry, catalysis to photovoltaics with main focus on energy conversion and storage technologies. He is interested in the investigation of the synthesis-structure-performance relationship in energy-related materials, and the understanding of the underlying material chemistry and physic principles, particularly the development of new materials and novel energy technologies. His work has been widely covered by the media. Dr. Wang joined PNNL in 2009 after received his Ph.D in materials science and engineering from Carnegie Mellon University.