

Plenary Session

Room Naupaka Salon 4 - Session PL-MoM

Plenary Session

Moderator: Gregory S. Herman, Argonne National Laboratory

11:20am PL-MoM-11 Unlocking Interfacial Water and Dynamics to Design Catalytic Activity and Selectivity, Yang Shao-Horn, MIT **INVITED**

Understanding the role of Interfacial water structure and dynamics on the reaction barrier of (electro)chemical reactions represents an exciting opportunity to transform the designs of catalytic activity and selectivity. In this talk, we will examine the cation-dependent, pKa-dependent or pH-dependent reaction rates including hydrogen evolution and oxidation, oxygen reduction and evolution and CO₂ reduction. The origin to these trends will be discussed in the context of local water-ion structures and solvation environments at the interface and the influence on electron transfer and proton-coupled electron transfer barriers. Such work provides molecular insights into potential use of chemical physics of electrolytes to control rates of reactions relevant to making of clean fuels and chemicals.

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