

Molecular and Solid-State Single-Site Catalysts for Sustainable Energy Technologies

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Single-site catalysts have received enormous interest as they form the boundary between molecular and solid-state catalysis. In this presentation, we will explore how molecular metal oxides, so-called polyoxometalates can be used as molecular models for single-site catalysts. Specifically, their metal functionalization will be discussed as a key approach for knowledge-based control of function. The targeted catalytic applications will revolve around sustainable energy technologies including the oxygen reduction and oxygen evolution reaction, as well as nitrogen activation catalysis. A critical analysis of the advantages and limitations of the systems studied will be presented together with current and future research directions.....and yes, the presentation will mention Iron!