

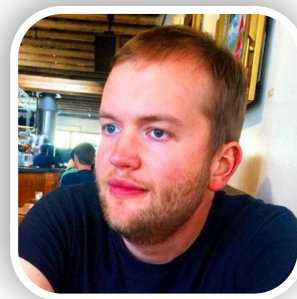
O-I-M Seminar Series

Organic/Inorganic/Materials • <https://chemistry.uoregon.edu/>

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Friday, October 23, 2020 • 12 noon [Zoom]



Electrochemical phase transfer and energy storage using small organic molecules

Abstract: The potential of small organic molecules to act as proton- and electron-carriers for both energy storage and catalysis is perhaps an untapped resource in how we think of electrocatalysis. Herein is shown work conducted on the development of a system for the precious metal-free electrochemical production of hydrogen peroxide. This technology uses electrochemical phase transfer catalysis to shuttle proton-electron equivalents between an aqueous electrochemical cell, and an electrolyte-free phase, using an immiscible organic solvent. Also presented is preliminary work on applying this concept to the electrosynthesis of more complex organic molecules, as well as considering redox-active organic molecules more commonly used for catalysis, as mediators in redox flow batteries.

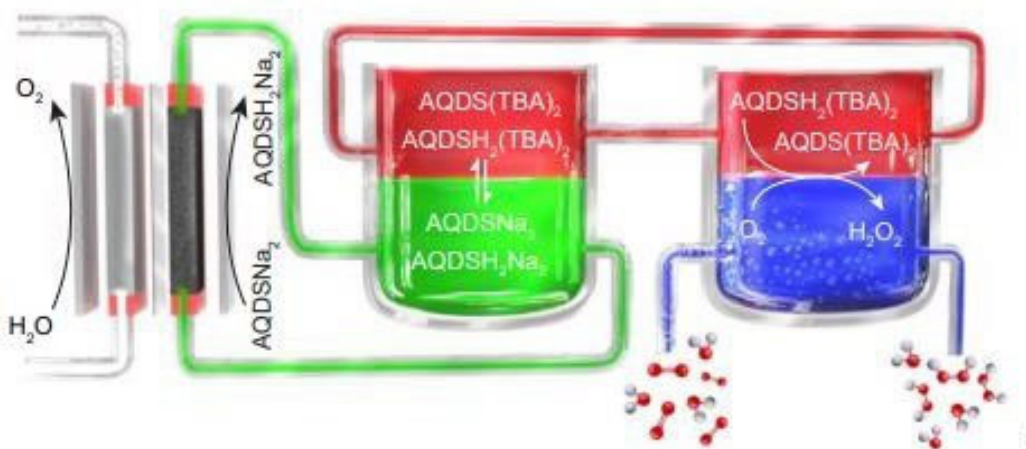


Fig 1. Conceptual schematic of a H₂O₂ electrolyser driven by phase transfer catalysis

[For link & password, contact jmacha@uoregon.edu]