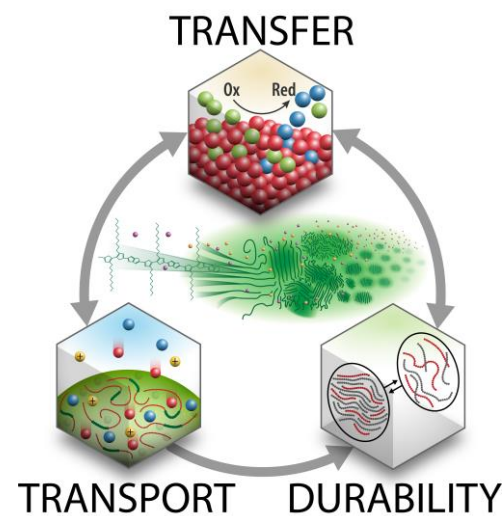


Center for Soft PhotoElectroChemical Systems (SPECS)

Erin Ratcliff (University of Arizona); Class: 2022-2026

MISSION: To understand the factors controlling charge and matter transport processes in inexpensive, scalable, and durable π -conjugated polymer (plastic) materials, and to explore the factors across spatiotemporal scales that underpin emerging energy conversion technologies to influence the formation of fuels, such as H_2 , from sunlight and develop new approaches to energy storage.



<http://specs.arizona.edu/>

RESEARCH PLAN

SPECS is organized around three interconnected thrusts. **Thrust 1: Hybrid Electrical-Ionic Charge Transport** will understand and control the complex polymer/electrolyte structures that control ion and charge transport relevant to energy conversion and energy storage processes. **Thrust 2: Charge Transfer and Energy Cascades** will understand and optimize polymer photocathodes for efficient charge transfers to drive fuel-forming reactions such as formation of H_2 . **Thrust 3: Durability** focuses on creation of a molecular and material scale understanding, leading to design guidelines for creation of robust energy conversion and storage systems.



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