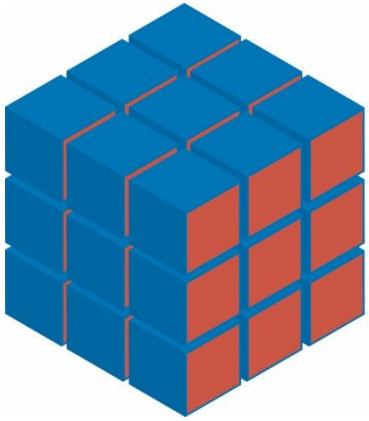


CuBE

NSF I/UCRC Proposal: Center for Bio-inspired Electrocatalysis

Scott Anderson

Departments of Chemistry

University of Utah

NSF I/UCRC Proposal in 2016

CuBE

NSF Industry/University Cooperative Research Center

Collaborative Industry Research

- **Provides seed funding**
- **Guiding hand**
- **Proven model**
- **Best practices**

Industry Members (IAB)

- **Fund research**
- **Provide general direction**
- **Focus & prioritize research to meet member needs**

Universities

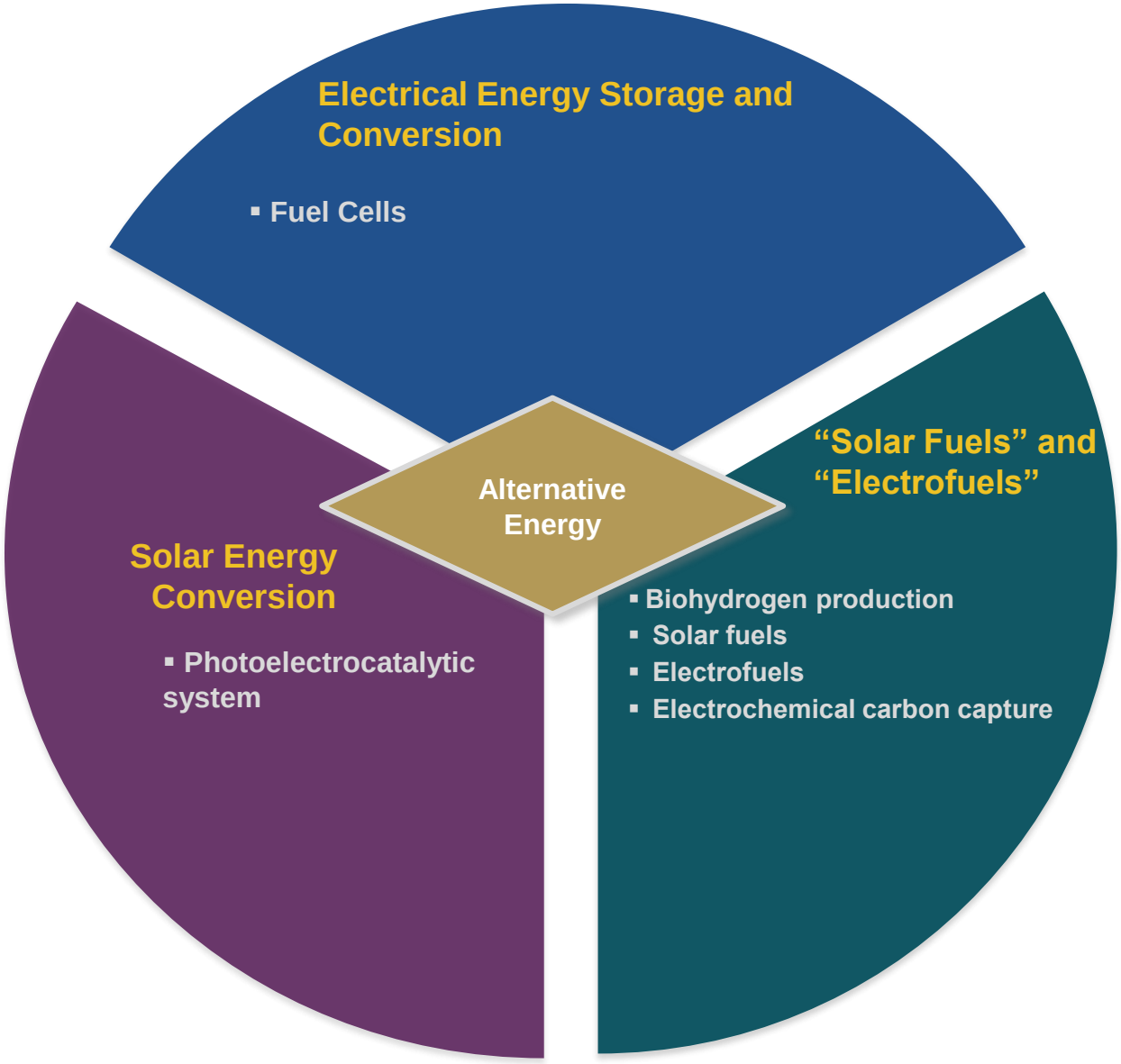
- **World renowned scholars within reach**
- **Students & post-doc researchers**
- **State-of-the-art laboratories**
- **Manage the Center**

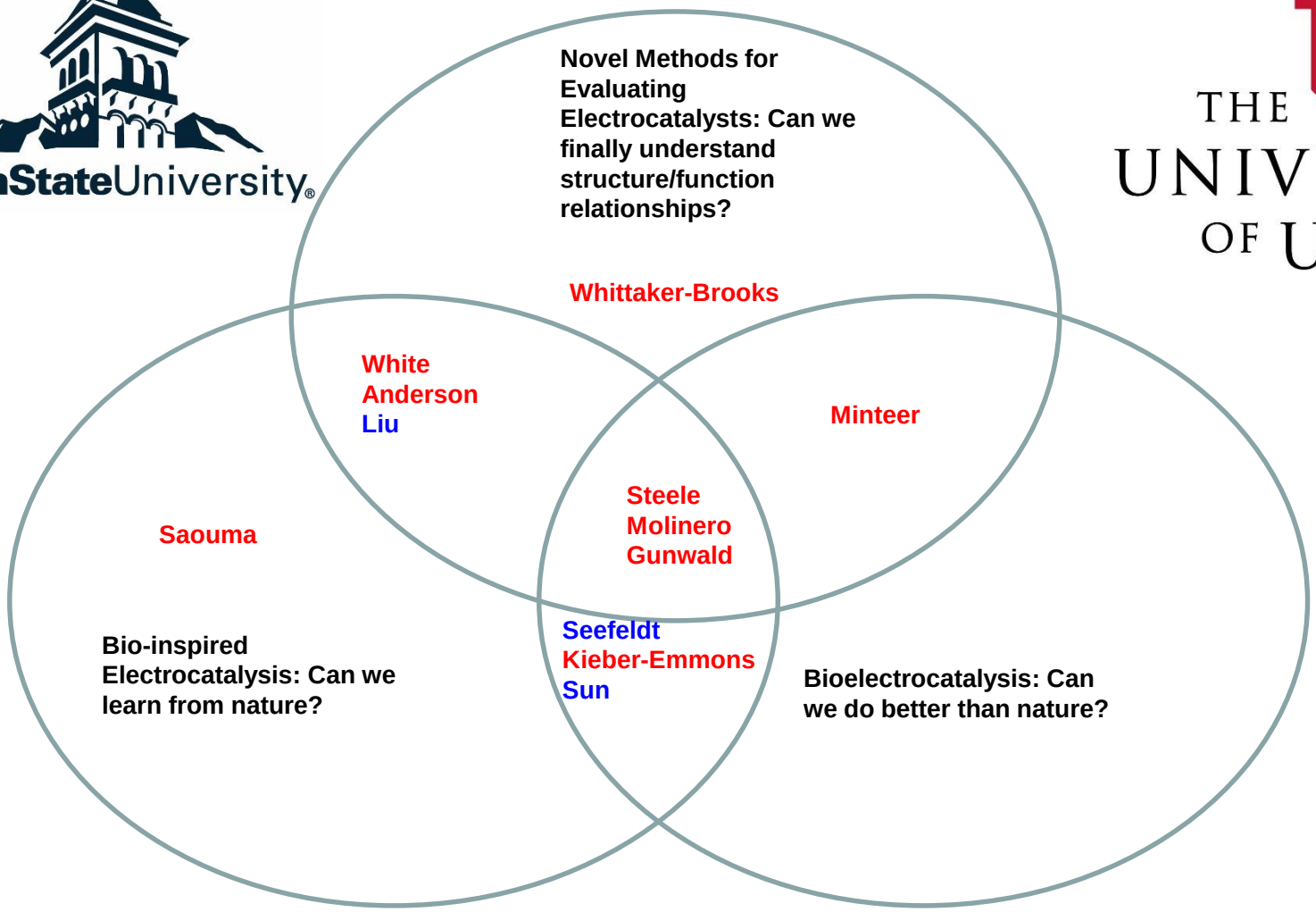
How does an I/UCRC Work?

- **IAB & Universities identify industry's technology needs.**
- **University scientists propose research projects.**
- **IAB votes to prioritize and fund projects.**
- **Principle Investigators (PIs) provide IAB with periodic updates.**
- **Universities review status to IAB semi-annually.**

Electrocatalysis Focus in Utah

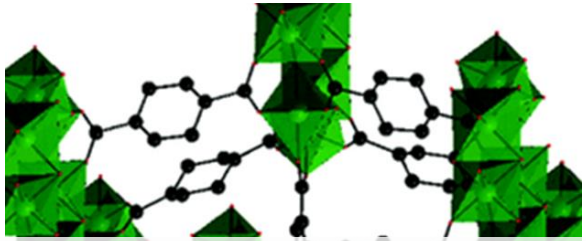
CuBE

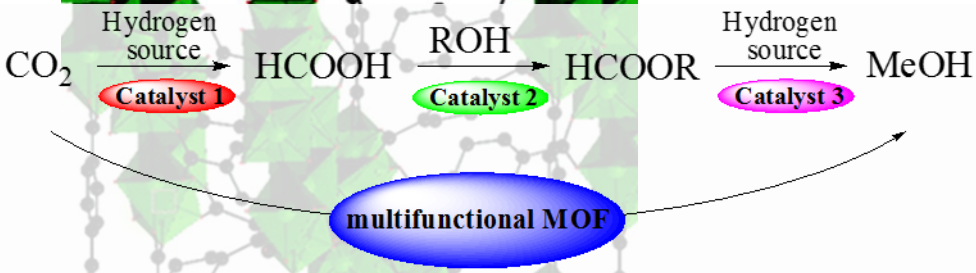


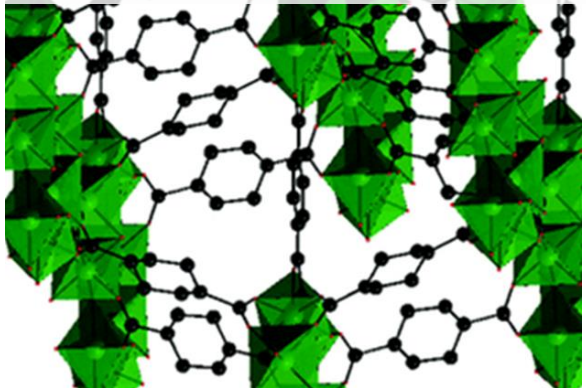

Novel Methods for Evaluating Electrocatalysts: Can we finally understand structure/function relationships?
Whittaker-Brooks
White
Anderson
Liu
Minteer
Steele
Molinero
Gunwald
Saouma
Seefeldt
Kieber-Emmons
Sun
Bio-inspired Electrocatalysis: Can we learn from nature?
Bioelectrocatalysis: Can we do better than nature?

Bio-inspired Electrocatalysis

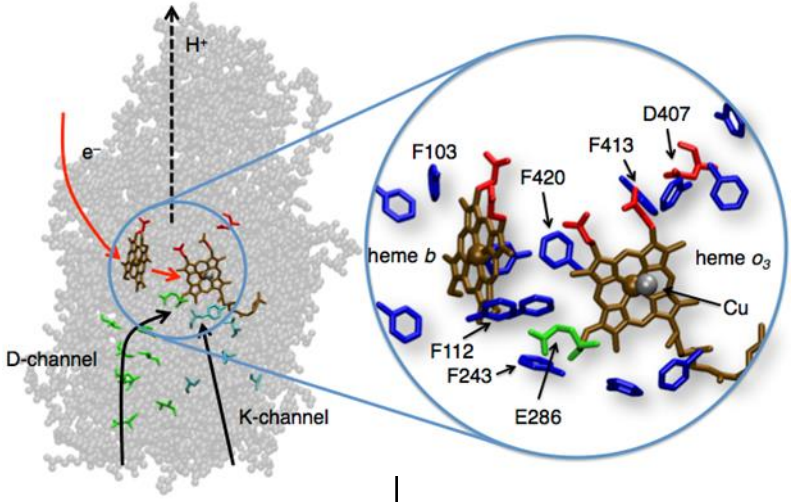
Carbon Dioxide Reduction to Methanol

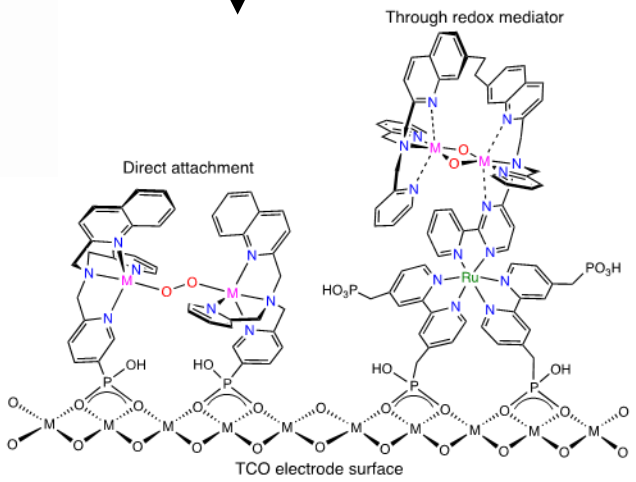






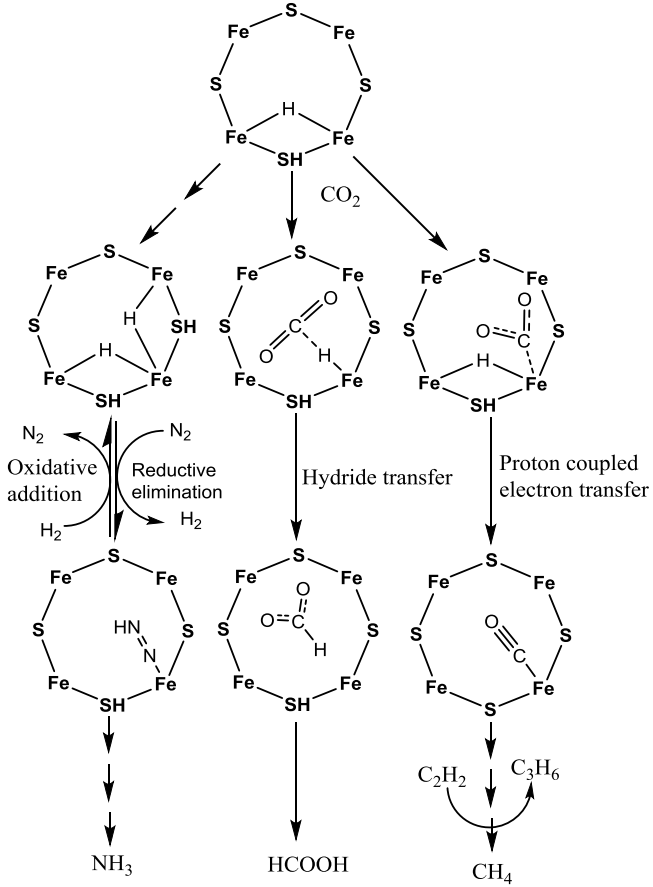
Bio-inspired Water Oxidation



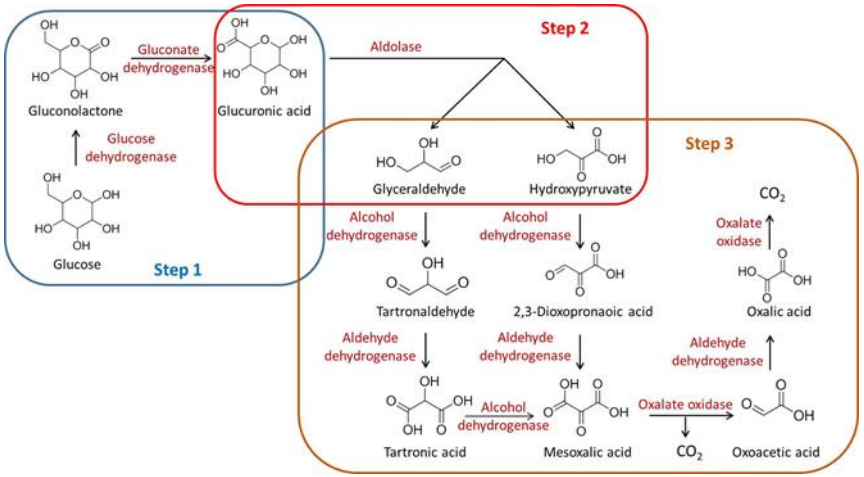


Bioelectrocatalysis for Fuel Oxidation and CO_2 Reduction

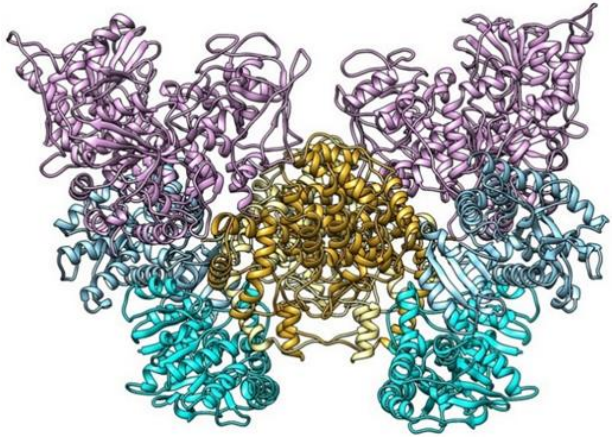
Nitrogenases for Carbon Dioxide Reduction



Metabolic Engineering on an Electrode

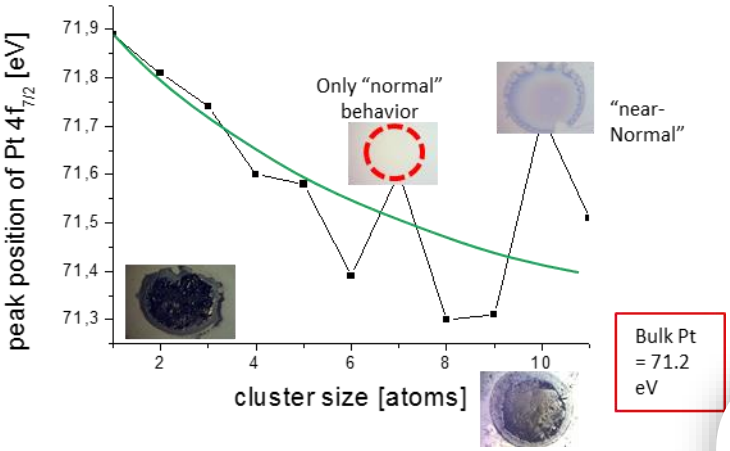


Building Channels between Catalytic Active Sites

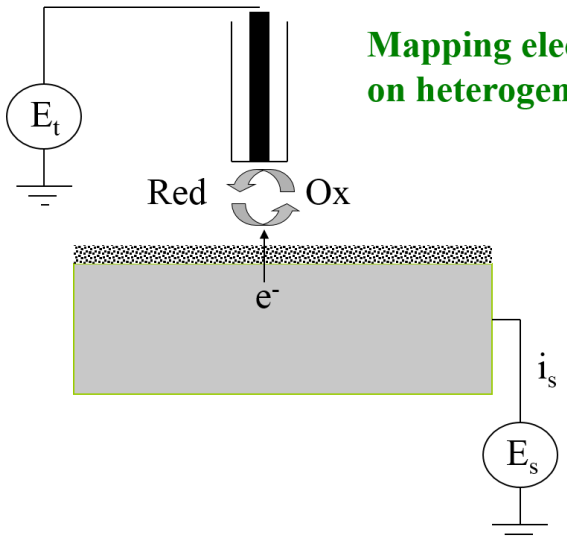


Novel Methods for Evaluating Electrocatalysis

Ability to Prepare Electrode for Size Selective Metal Clusters

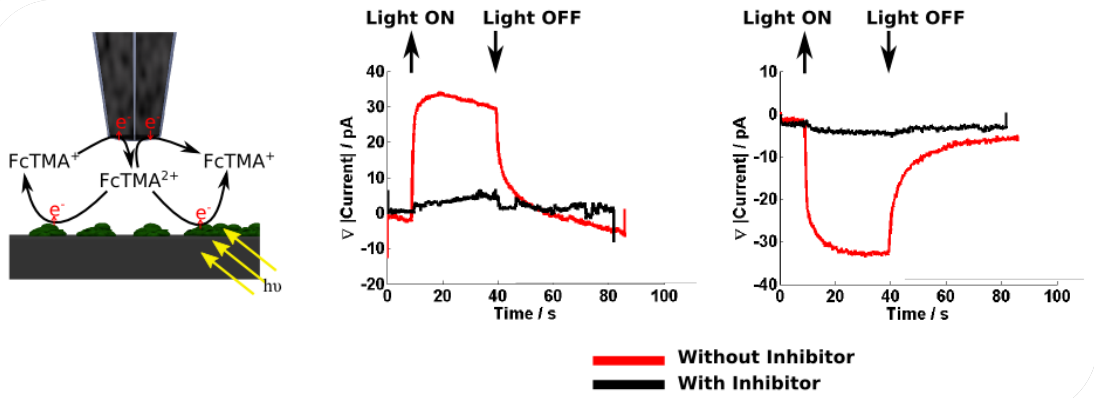


Scanning Probe Techniques for Evaluating Electrocatalytic Surfaces



Mapping electrochemical activity on heterogeneous surfaces

Scanning Probe Evaluation of Bioelectrocatalysis and Bio-inspired Electrocatalysis



How do companies benefit?

- **Network with industry peers.**
- **Access to students with relevant hands-on experience.**
- **Collaborate with scientists on innovative energy products and processes.**
- **Member research dollars are leveraged.**
- **Prepublication access to technical papers.**
- **Easier access to other NSF research funding.**
- **Access to intellectual property.**

If Interested in Paricipating, Contact:

Shelley D. Minteer, Ph.D.

Departments of Chemistry and Materials Science & Engineering

University of Utah

minteer@chem.utah.edu

Phone: (801)587-8325

Letter of Intent Due to January 2016