

Thermodynamic Considerations for Hydrogenation of CO₂: What Factors Limit Catalyst Performance?

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The increase in global energy demands, coupled with growing environmental concerns, necessitates the development of viable technologies to store solar energy. Towards this end, we are focused on developing catalysts that hydrogenate CO₂ to methanol or formic acid, with an emphasis on rational design. My talk will discuss our recent kinetic and thermodynamic studies on key steps of H₂ addition and transfer to CO₂, and how varying the catalysts impact these parameters. I will then discuss mechanistic studies aimed to elucidate the role of amines in CO₂ hydrogenation to methanol, which will help establish what sort of carbon capture agent is ideal for one-pot carbon capture and recycling schemes. Finally, I will present preliminary hydrogenation studies with newly designed catalysts that feature pincer ligands with decoupled proton and hydridic sites.

Date: Wed, Mar. 27, 2019

Time: 4:30-5:30 pm

Location: 208 Clark Hall

Students, meet the speaker over coffee and cookies in the Bennett Conference room at 3:30 pm