

"Here at the Li Research Group, we focus on the **design, synthesis, and characterization** of **nanomaterial-based catalyst and reagent particles** for biomass and fossil energy conversions, green liquid fuel synthesis, CO<sub>2</sub> capture, and pollutant control. Our research also encompasses **chemical reaction engineering** and **process synthesis and optimization**. Density Functional Theory (DFT) based methods are also used to elucidate the particle reaction mechanisms and to identify potential ways to improve particle performance."

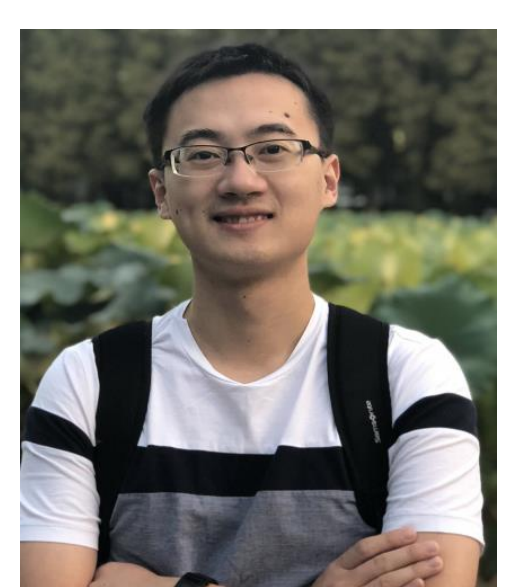
– Fanxing Li, Alcoa Professor & University Faculty Scholar

### Biomass Conversion for Renewable Hydrogen and Fuels Production

#### Sorption-Enhanced Oxidative Steam Reforming



Leo Brody



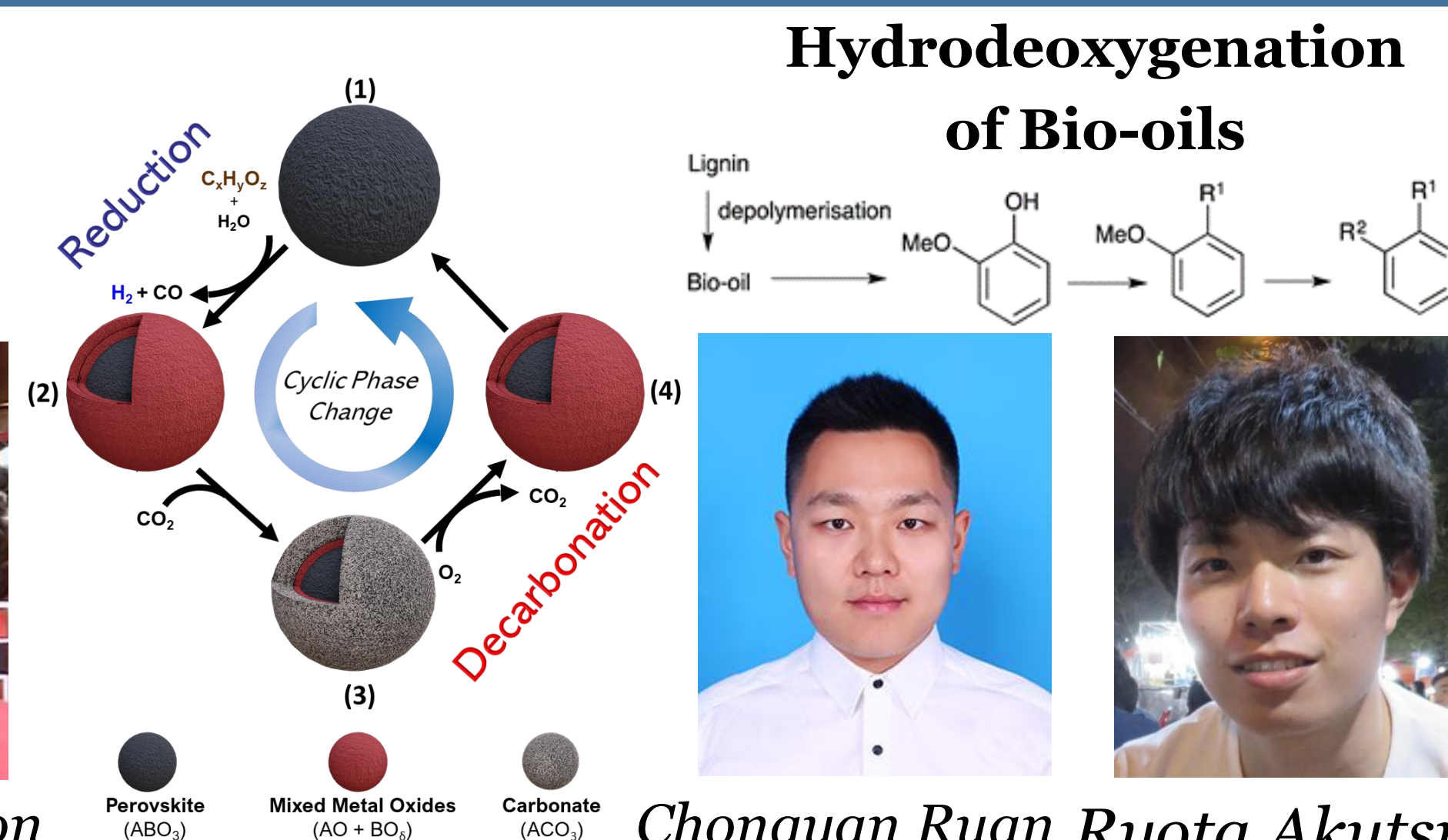
Runxia Cai



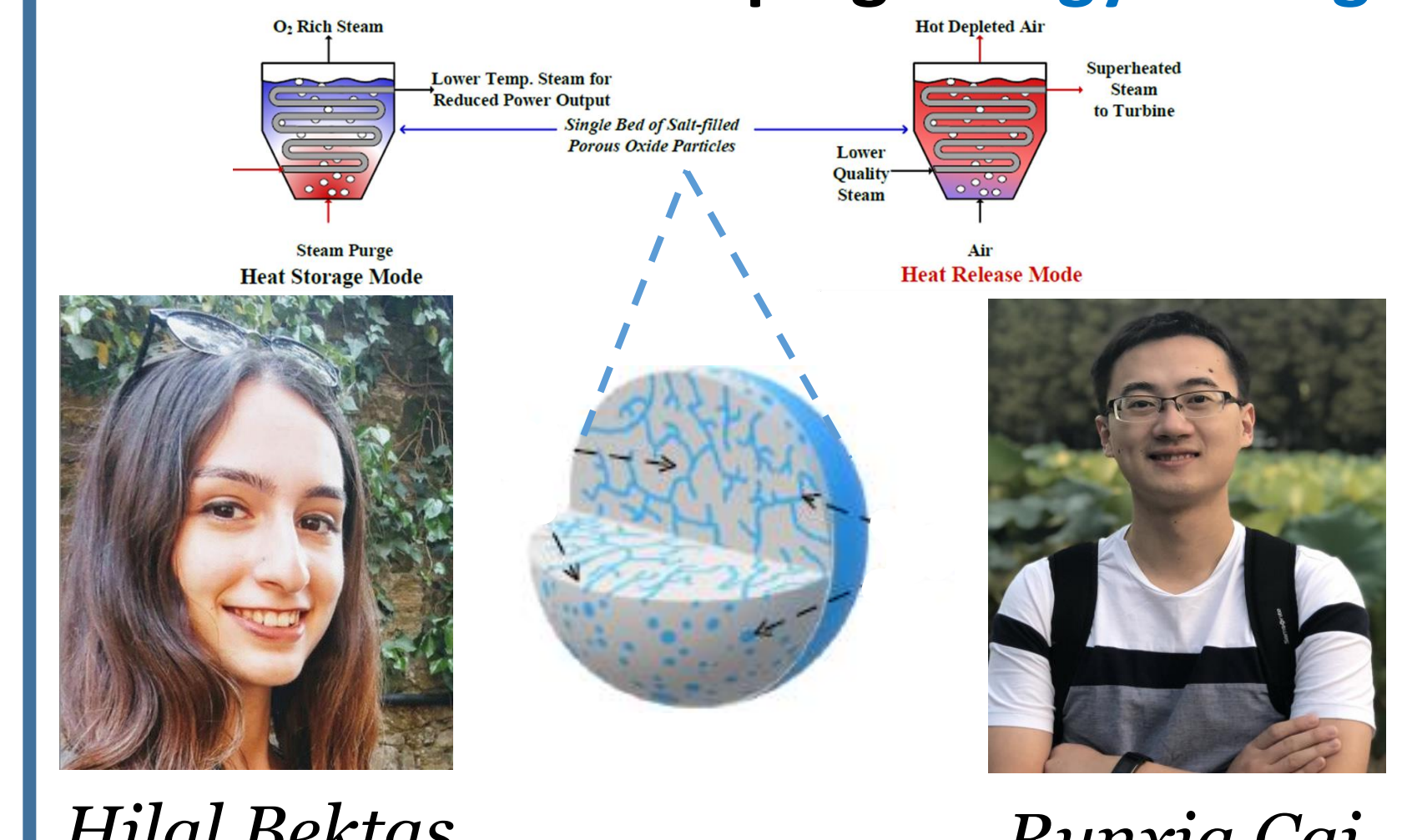
Mahe Rukh



Alajia Thornton



### Thermochemical Looping Energy-Storage



### Chemical Looping Oxidative Dehydrogenation for Sustainable Olefin Production

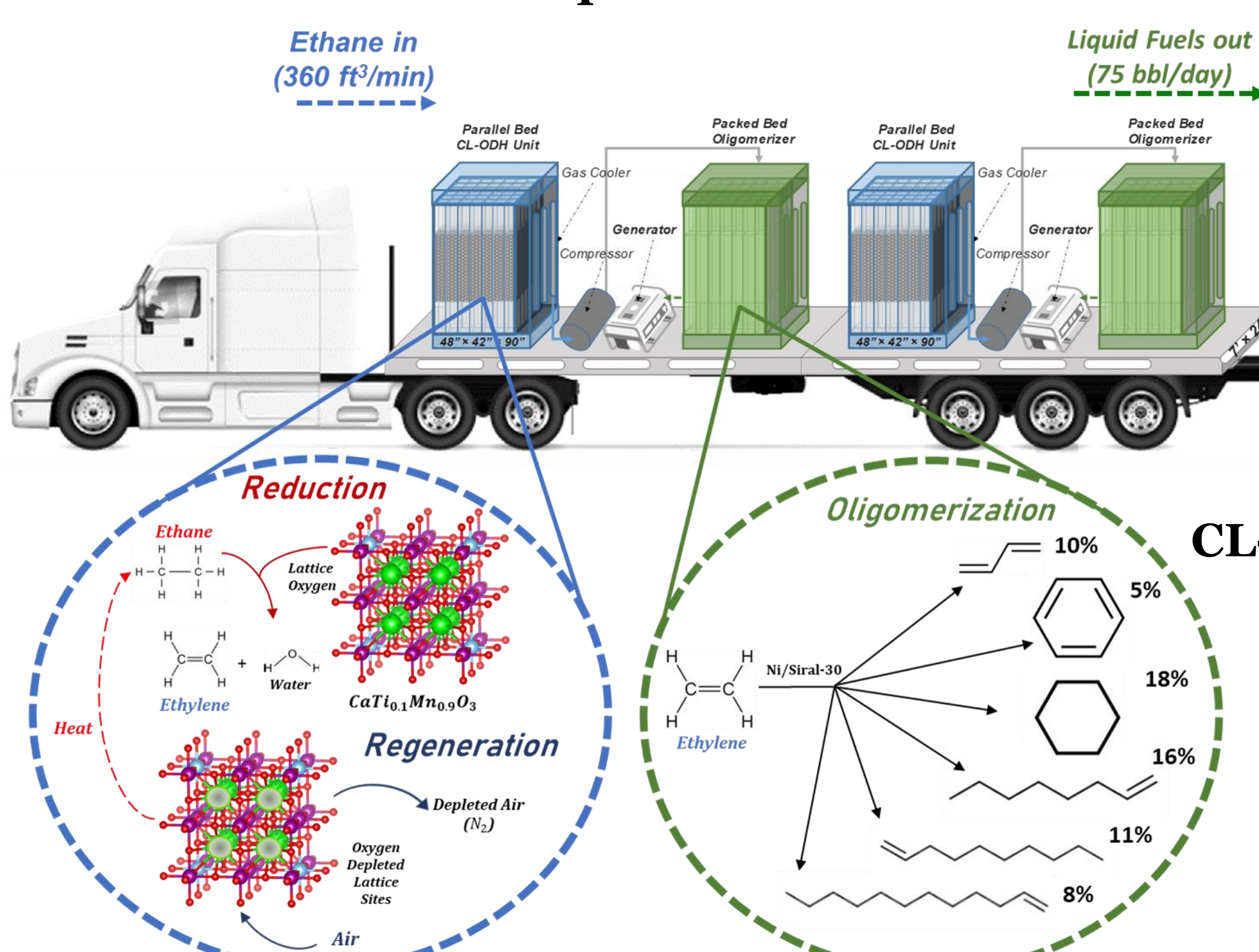
#### Modular Ethane-To-Liquids



Luke Neal



Leo Brody



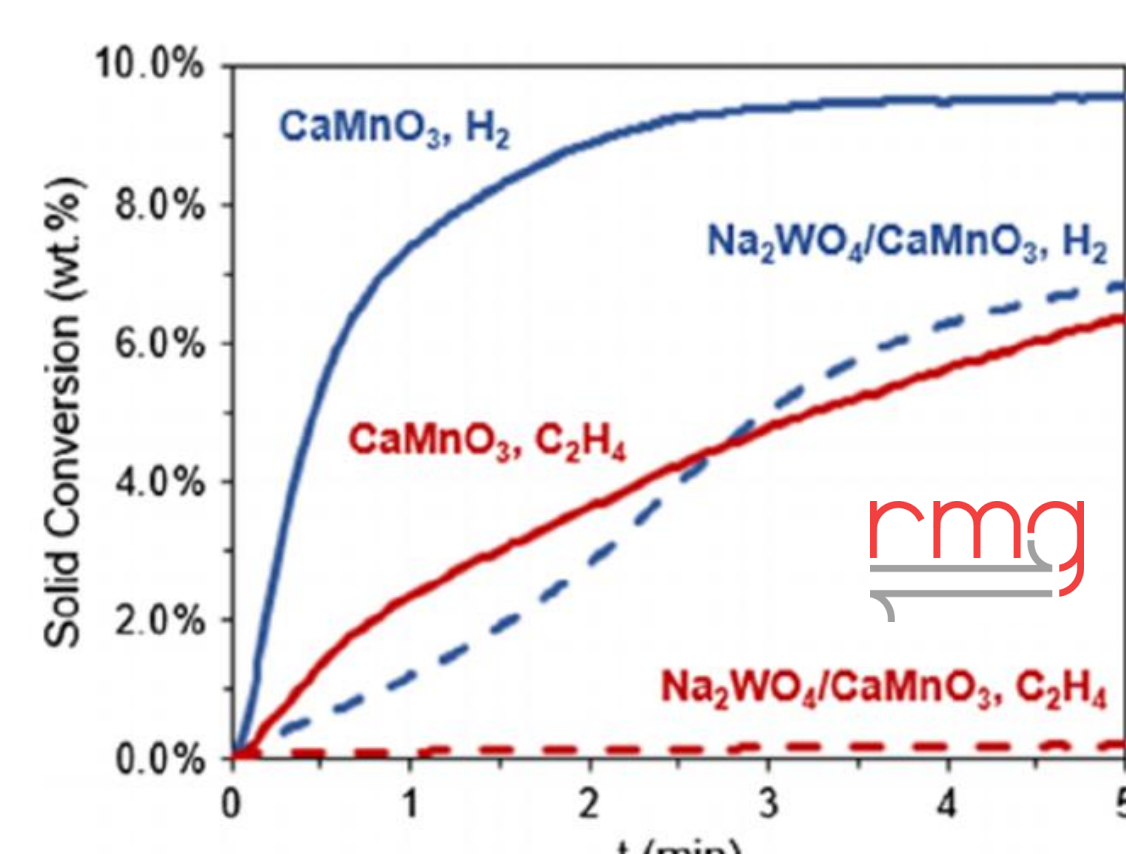
#### ODH Reaction Redox Kinetics



Yuan Tian



Arnab Bose

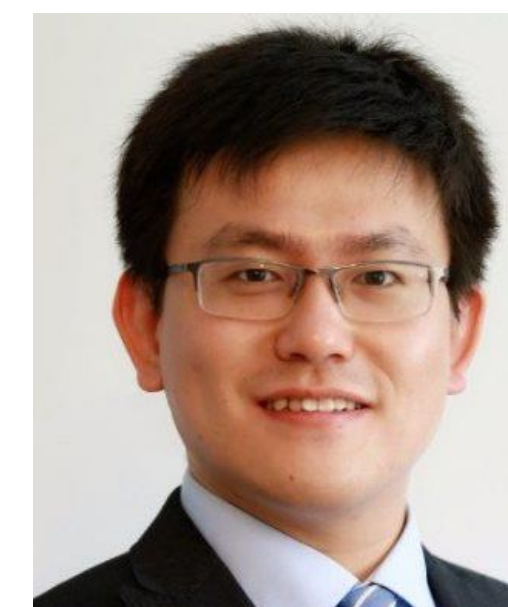


#### CL-ODH of Alkenyl Benzene Compounds

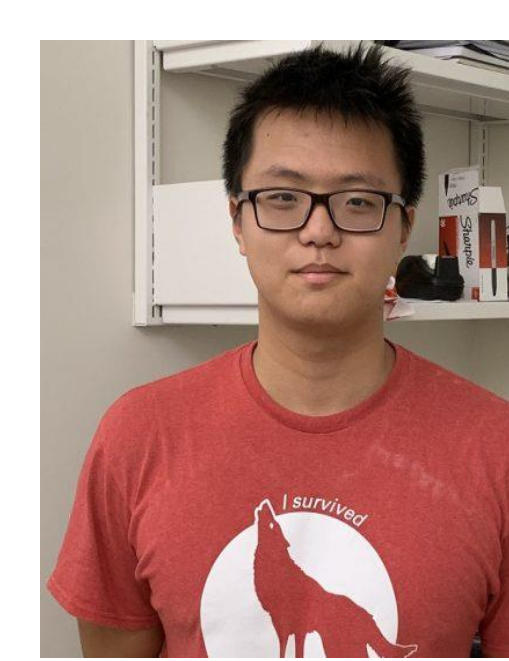


Aaron Frye

#### Methane to Benzene



Xin Li

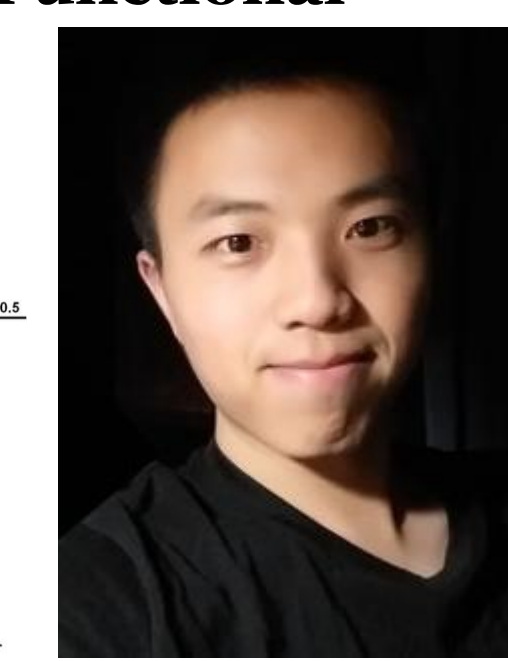
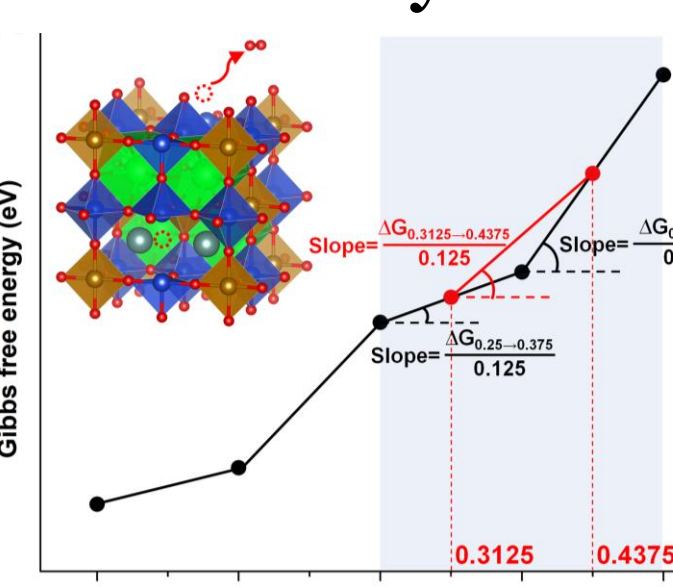


Junchen Liu



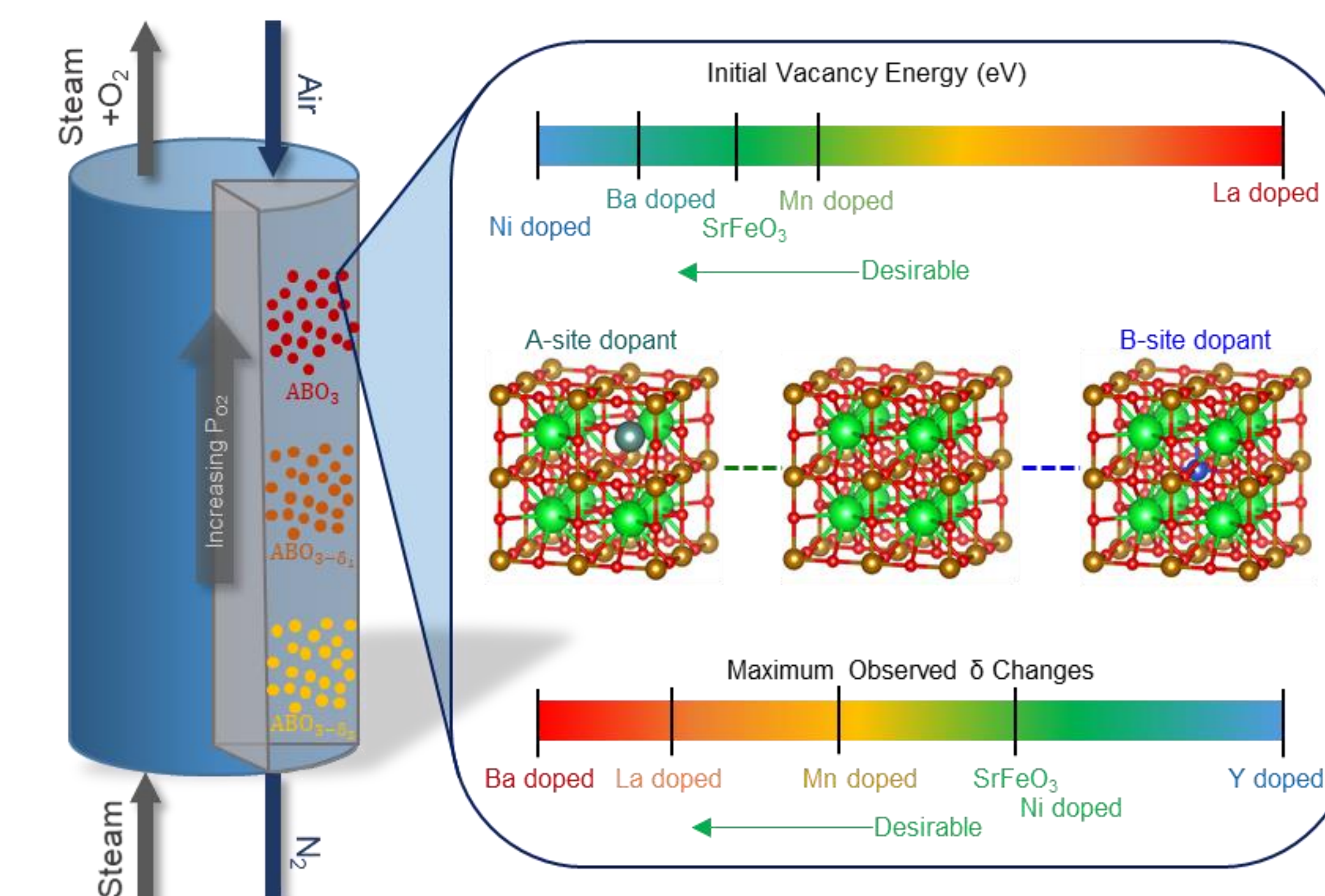
Xijun Wang

#### Ab Initio Calculations via Density Functional Theory

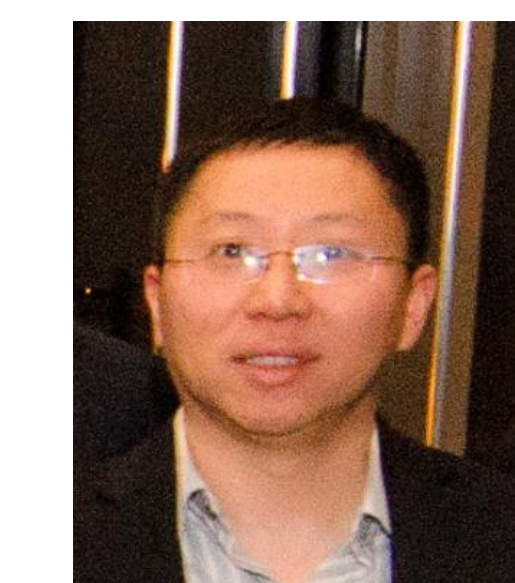


Kunran Yang

### Chemical Looping for Energy Efficient Air Separation



Xijun Wang

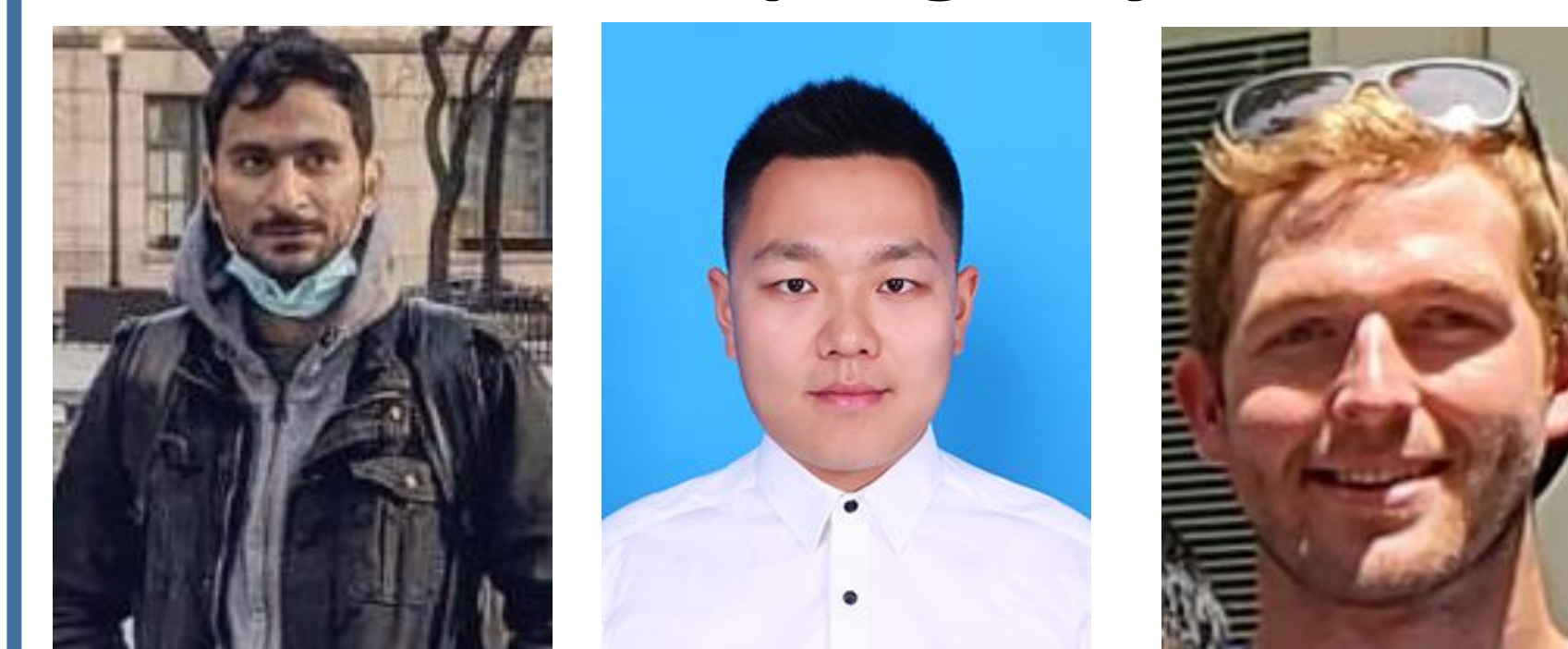


Jian Dou



Emily Krzystowczyk

### Chemical Looping Dry Reforming for Sustainable Syngas Production



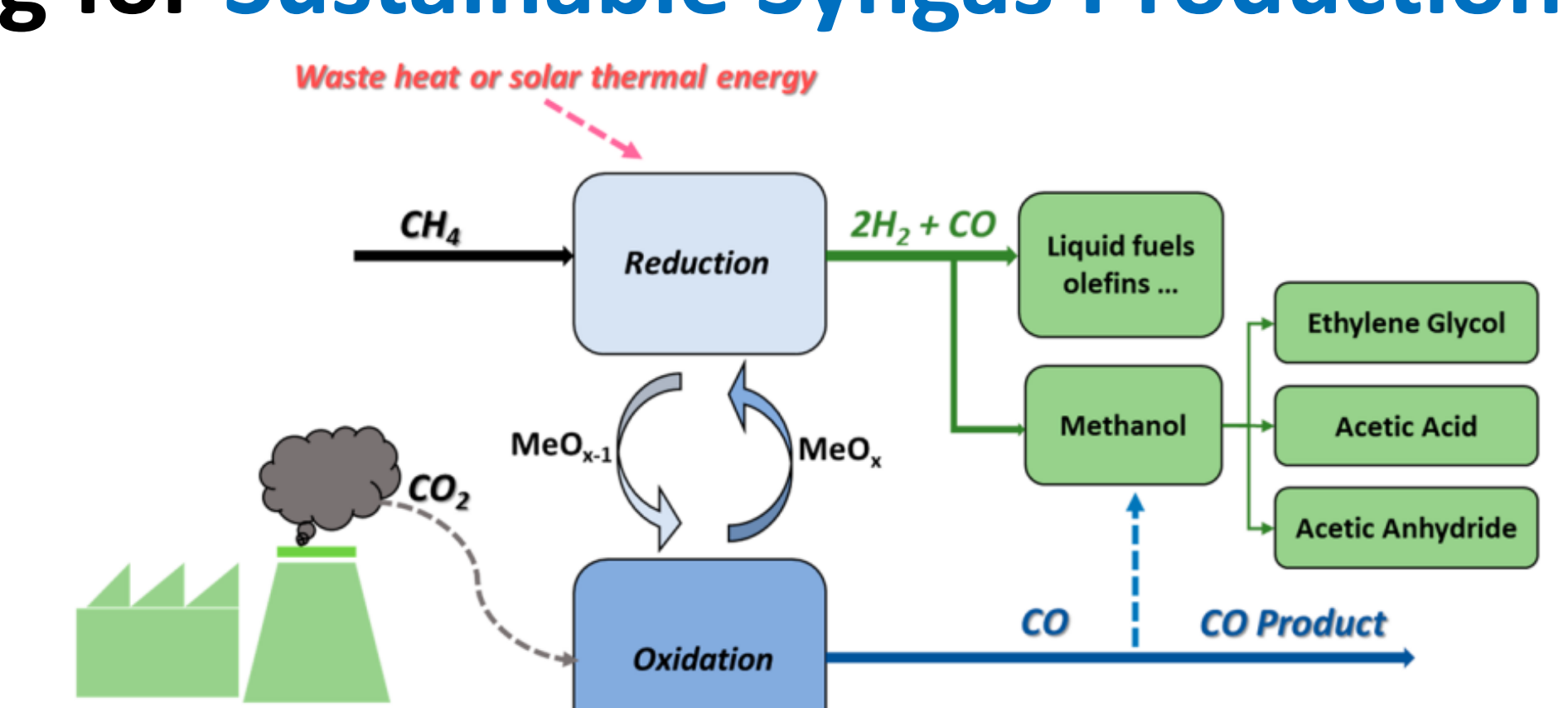
Sherafghan Iftikhar



Chongyan Ruan



Will Martin



### Chemical Looping for Carbon Capture and Utilization

#### Molten Salt-Mediated Ethane ODH with Integrated CO<sub>2</sub> Capture



Junchen Liu

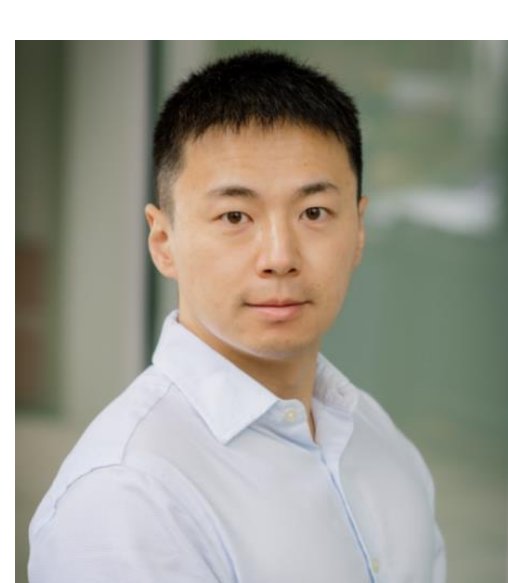


Dennis Chacko

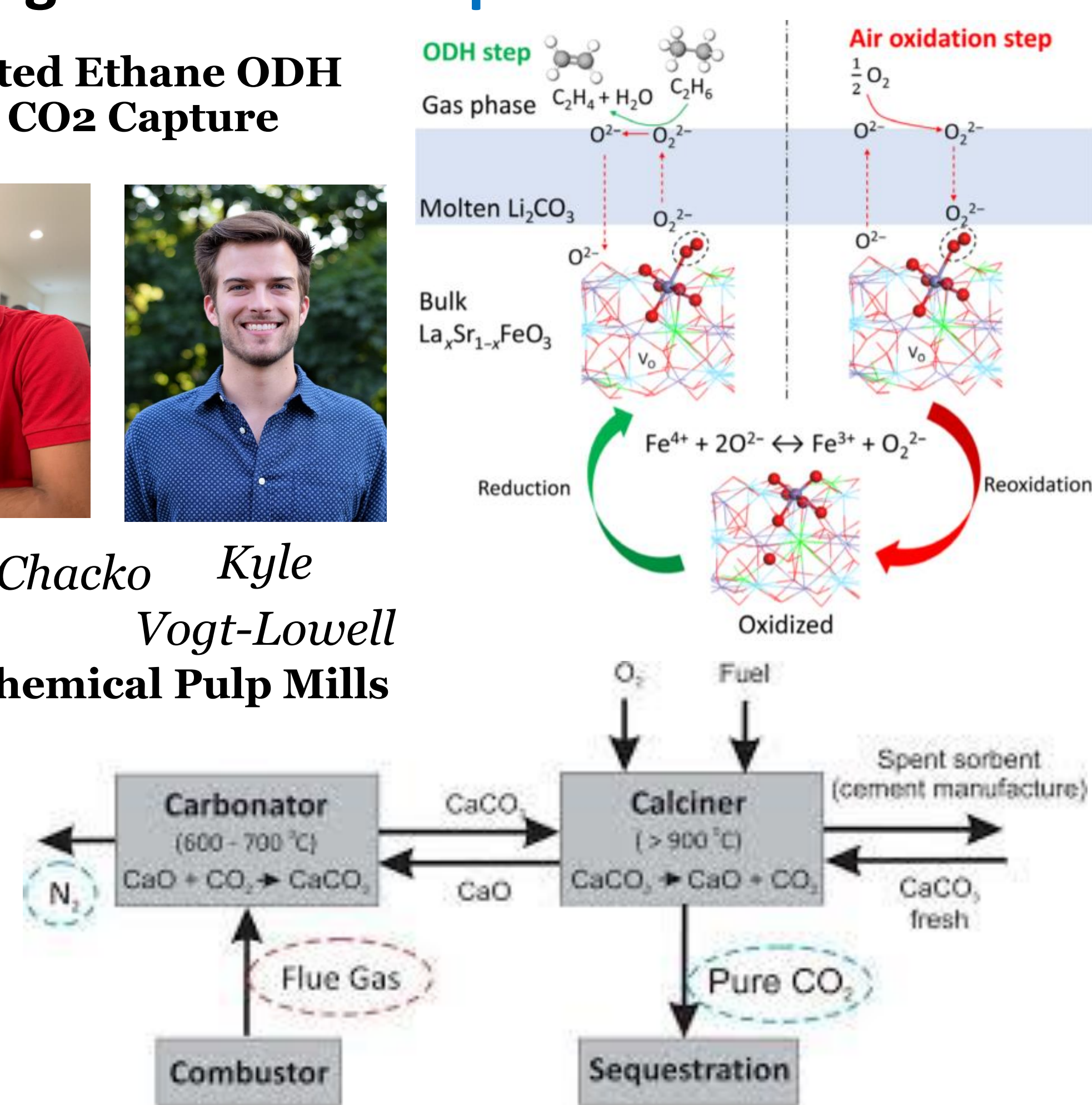


Kyle Vogt-Lowell

#### Carbon Capture at Chemical Pulp Mills



Ruochen Wu



### Where we Publish

- ACS Catalysis
- ACS Sustainable Chemistry and Engineering
- Advanced Energy Materials
- AIChE Journal
- Applied Catalysis B: Environmental
- Applied Energy
- Biotechnology Progress
- Catalysis Science and Technology
- Catalysis Today
- Carbon
- ChemCatChem
- ChemSusChem
- Chemical Engineering Journal
- Chemical Engineering Science
- Chemistry of Materials
- Current Opinion in Chemical Engineering
- Energy
- Energy and Environmental Science
- Energy and Fuel
- Energy Fuels
- Energy Technology
- Environmental Science and Technology
- Fuel
- Fuel Processing Technology
- IScience
- International Journal of Hydrogen Energy
- Industrial and Engineering Chemistry Research
- Journal of Advanced Manufacturing Processing
- Journal of Catalysis
- Journal of Cleaner Production
- Journal of Material Chemistry A
- Journal of Physics: Energy
- Journal of Vacuum Science Technology
- Nano Energy
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