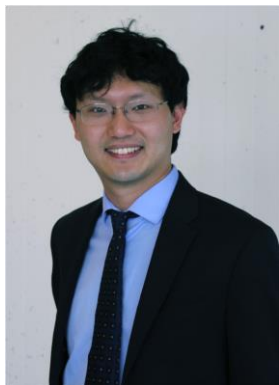


CO₂ Mineralization for *in situ* Storage and *ex situ* Enhanced Metals Recovery



I ILLINOIS

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Xiao joined the faculty of UIUC in January 2019, and his research program focuses on electrochemical interfaces for advanced separations and process intensification. He obtained his BAsC in Chemical Engineering from the University of Waterloo in 2011. He completed his PhD in Chemical Engineering from MIT at 2017. During his doctoral studies, Xiao received the MIT Water Innovation Prize (2016) and the MassCEC Catalyst Award (2017).

Xiao's group pursues both fundamental research in redox-electrochemistry for achieving molecular selectivity, as well as seeks to develop new electrochemical engineering approaches for sustainable and energy-efficient separations. Xiao is a recipient NSF CAREER Award (2019), the ACS Viktor K. LaMer Award (2020), and a RCSA Scialog Fellow for Negative Emissions Science (2020).

Technology or focus area

- Separation Processes
- Electrochemical approaches for selective recovery of critical element and carbon capture
- Functional materials design for selective adsorption and release

Ideas, Interests, Concepts to be Explored

- Integrated chemical, electrochemical, and biological approaches for carbon mineralization and metals recovery
- The role of selective interfaces in assisting in enhanced metals recovery (e.g. sustainable electrowinning or electrosorption)
- New integrated approaches for electrochemical CO₂ capture and conversion