

Faculty Name:

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Lab:

Separation Innovations Lab

Project Title:

Targeted Selective Separation of Lithium Ions from Alkali Metal Cations in Brine Mixtures Using Switchable Solvents

Description:

Lithium is a critical mineral for the clean energy transition. To meet the impending surge in demand, direct lithium extraction (DLE) technologies that are economical and sustainable are urgently needed to enable increased production from conventional sources, access “technologically-locked” lithium assets in geothermal brines and produced water, and realize recycling and reuse of existing lithium stock. We propose a novel DLE technology based on switchable solvents. The innovation, termed switchable solvent selective extraction (S3E), utilizes temperature-responsive switchable hydrophilicity solvents to target the mining of Li⁺ from mixed-electrolyte brines. The overarching aim of this project is to advance fundamental understanding of the principal phenomena governing competitive ion partitioning in biphasic systems of switchable hydrophilicity solvents and lithium brines.

Location of Research:

On Site

of hrs/week:

40

Department/Program:

Earth and Environmental Engineering

Eligibility:

BS, First Year, BS, Second Year, BS, Third Year, MS

To apply, please contact:

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