

Keith Gneshin

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Graduate Institution: University of Utah

Location: Salt Lake City, UT

Graduate Discipline: Chemical Engineering

Hometown: Cottonwood Heights, UT

Research Interests:

Fuel production by pyrolysis of coal, biomass; Carbon nanomaterials; Li-Ion batteries.

About me:

The focus of my thesis project is underground coal pyrolysis (UCP), a process that would allow for fuel production from deep coals seams without the need for mining. In the UCP process, large heat sources, e.g. electrical heaters, RF or microwave sources, etc., would be placed in the ground to drive the thermal decomposition of coal into utile fuels under an inert atmosphere. The aim of my work is to generate a fully-integrated picture of UCP that includes not only an understanding of how processing methods affect the quantity and composition of fuels (both gas and liquid) produced, but also an understanding of the residual carbon matrix left in the ground. The residual carbon left from the UCP process has the potential to offer multiple environmental benefits including high-permeability, high-surface area reservoirs for CO₂ capture and storage and remediation of contaminated groundwater. In the long term, I hope to develop UCP as an environmentally-benign method for utilizing Earth's massive coal resources.

I hold a Bachelor's degree in chemical engineering from the Colorado School of Mines as well as a Master's degree in chemical engineering from Stanford University. Following my time at Stanford, I helped to launch a start-up company based upon a carbon nanomaterial that I developed as an undergraduate researcher. The material is of interest in the Li-ion battery community due to its unique charge and discharge properties as well as improved cycle life. As a lead engineer, I improved the nanomaterial production process to not only increase the material yield by an order or magnitude but to also introduce low-cost purification methods that would allow for the environmentally-benign production of this material.

If I'm not in the laboratory working, you will most likely find me skiing or mountain biking off the beaten path in the beautiful Wasatch Mountains outside of Salt Lake City.



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