

LA-UR-23-23059

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Title: My early career path to Los Alamos National Lab

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Intended for: Presentation for Center of Geo-processes in Mineral Carbon Storage
Early Career Social Hour

Issued: 2023-03-27



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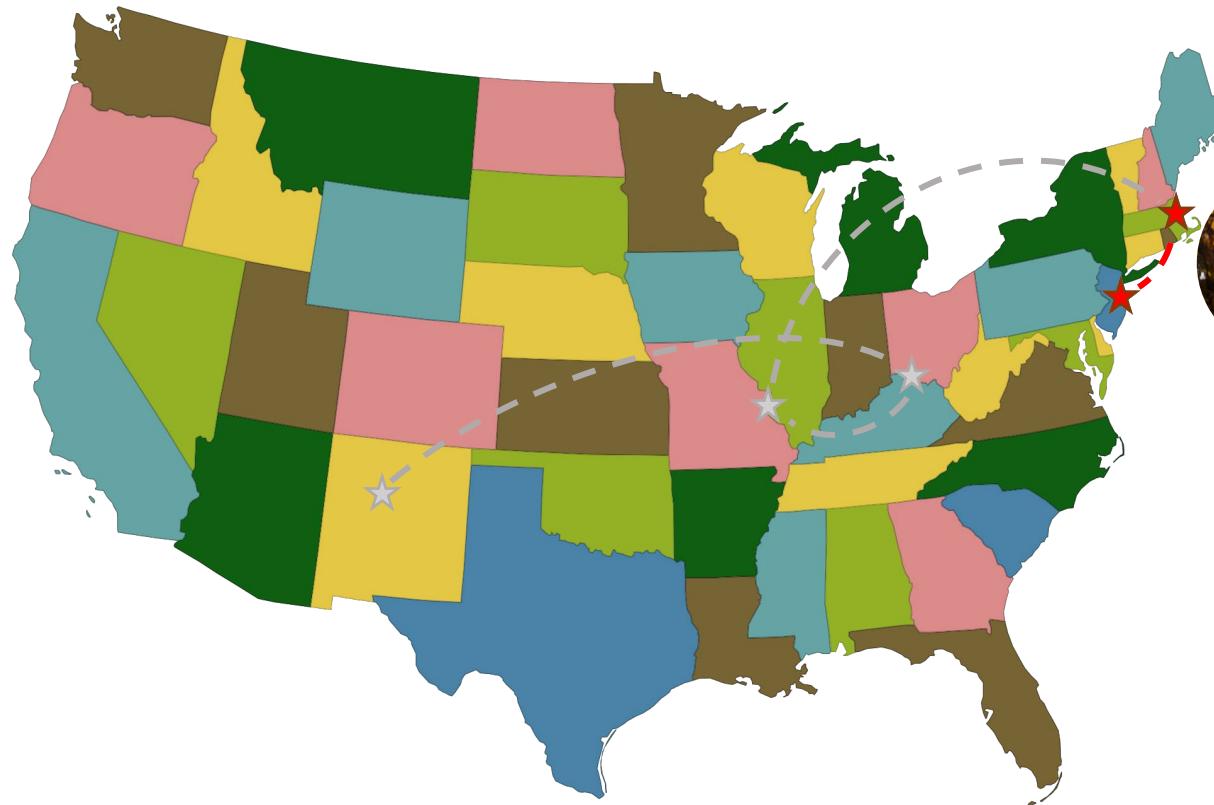
My early career path to Los Alamos National Lab

Dr. Chelsea Neil

Earth and Environmental Sciences Division, EES-16

March 31, 2023

The road so far...



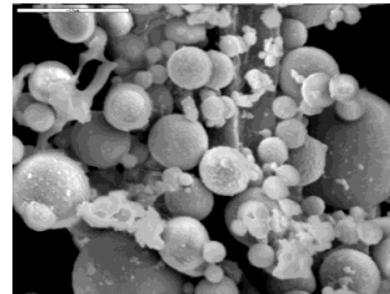
Tufts University
Medford, MA
B.S., Chemical
Engineering

Tufts University

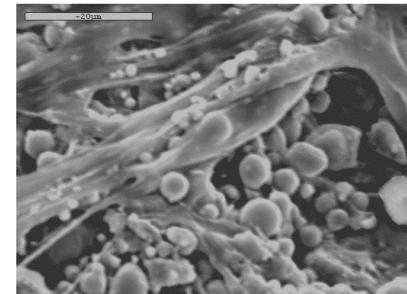
- B.S. in Chemical Engineering
 - Department of Chemical and Biological Engineering
- Began research through the Tufts Summer Scholars program working with Dr. Chris Swan in the Civil and Environmental Engineering Department
- Led to a senior honors thesis on toxin leaching from coal fly ash



Tufts University
Medford, MA
B.S., Chemical
Engineering



Free fly ash



Fly ash bound
with waste plastic
to form synthetic
aggregates

The road so far...



**Washington
University in St. Louis**
St. Louis, MO
Ph.D., Energy, Environmental, &
Chemical Engineering



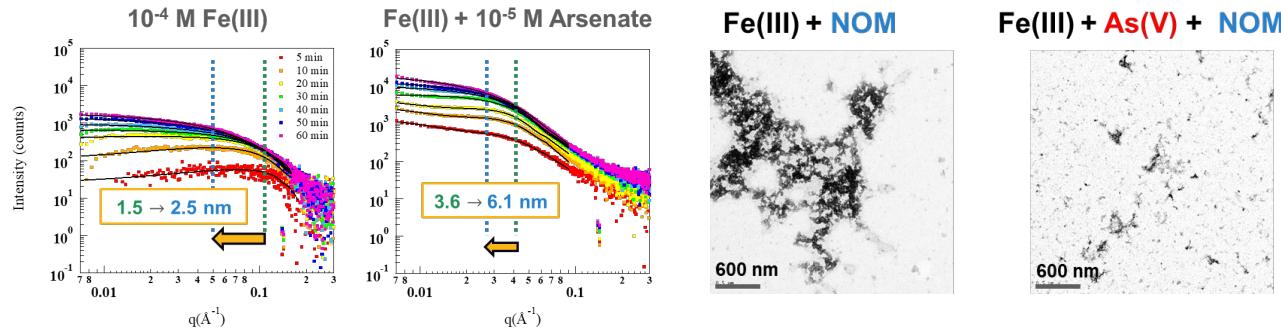
Tufts University
Medford, MA
B.S., Chemical
Engineering

Washington University in St. Louis



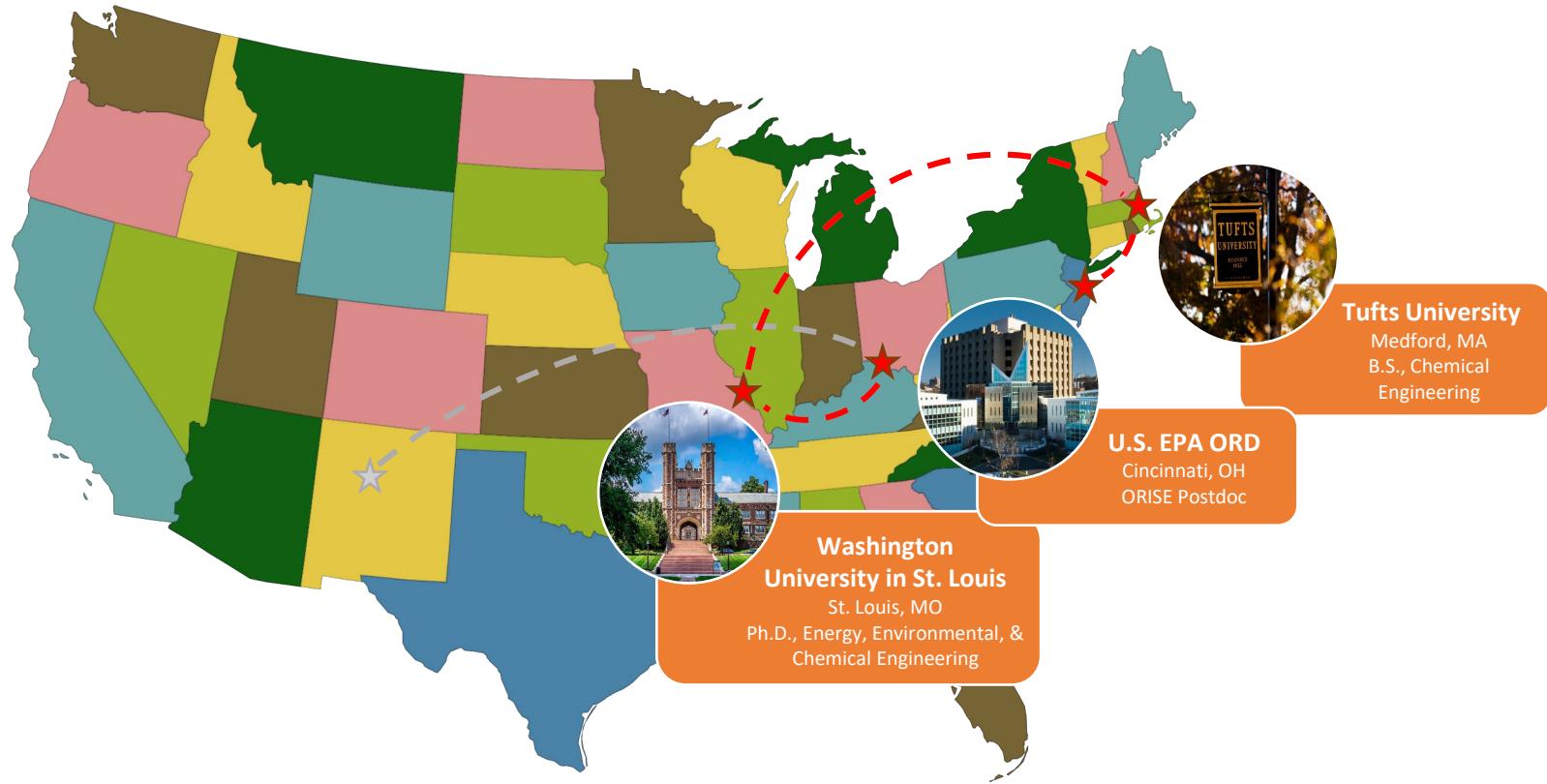
Washington
University in St. Louis
St. Louis, MO
Ph.D., Energy, Environmental, &
Chemical Engineering

- Joined Environmental NanoChemistry Laboratory (ENCL)
 - Advisor Dr. Young-Shin Jun
- Dissertation: “Understanding the Nano- and Macro-scale Processes Impacting Arsenic Mobilization during Managed Aquifer Recharge”
- First experiences in geochemistry and using synchrotron X-ray techniques



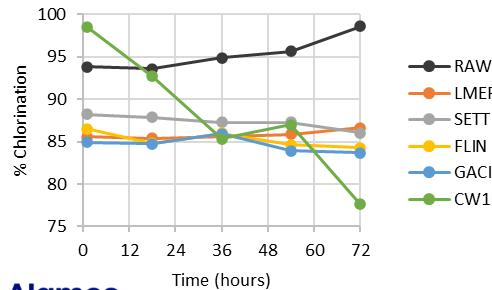
Incorporation of As in Fe hydroxide precipitates affects size and aggregation.

The road so far...



U.S. Environmental Protection Agency

- Took ORISE postdoc position with Dr. Jeff Yang
- Worked primarily on two projects:
 - Developing a decision support system for aquifer recharge implementation
 - Studying disinfection byproduct formation during a storm event



More brominated DBPs from carbon remaining post GAC treatment (CW1I)



U.S. EPA ORD
Cincinnati, OH
ORISE Postdoc

The report cover features the EPA logo and the title 'Decision Support System for Aquifer Recharge (AR) and Aquifer Storage and Recovery (ASR) Planning, Design, and Evaluation - Principles and Technical Basis'. It includes a diagram of an aquifer recharge system with labels for Water Source, Permeation, Infiltration basin, Recharge, Recovery, Post Treatment, and End Use. Below the diagram are two photographs: one of a large industrial storage tank and piping system, and another of an industrial facility with a cityscape in the background.

The road so far...



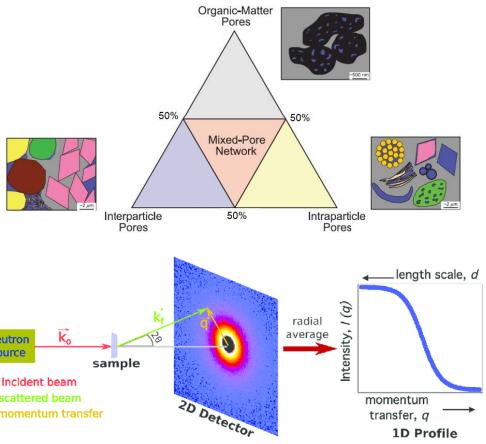
Los Alamos National Laboratory

- Joined the Earth and Environmental Sciences Division in 2018
 - Member of the Radionuclide Geochemistry team
- Research primarily falls under two LANL mission critical areas:
 - National Security – nuclear nonproliferation detection
 - Energy Security – supporting green energy utilization and carbon management



Radionuclide Geochemistry team

Selected Projects



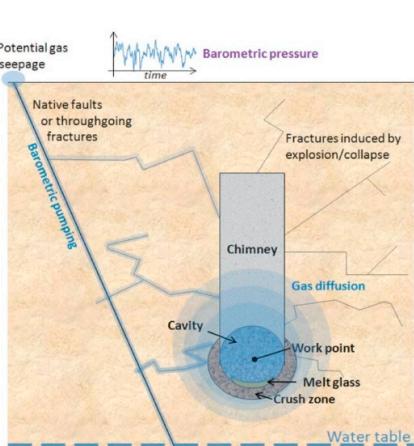
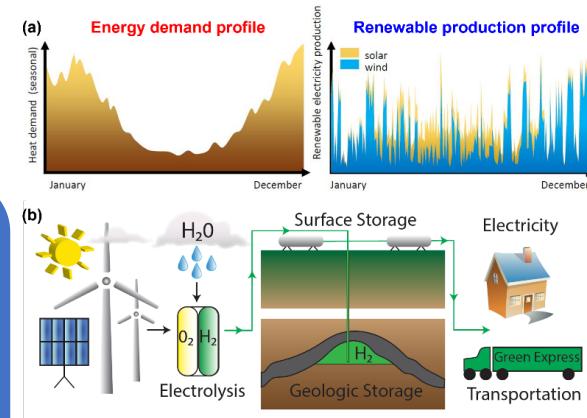
Castellanos, M., et al.
Comput. Struct. Biotechnol. J. 15 (2017): 117-130.

Fluid behavior in tight rocks

Geologic hydrogen storage feasibility

Signature transport from an underground nuclear explosion

Carbon mineralization by mafic/ultramafic rocks



Thank you!

Questions or comments?

Dr. Chelsea W. Neil

Email: cwneil@lanl.gov

Acknowledgements



U. S. DEPARTMENT OF
ENERGY

