

# Geochemical and Reactive Transport Modeling for Geologic CO<sub>2</sub> Storage

4<sup>th</sup> Hands-On Workshop on Fundamentals of Subsurface Geochemical Processes, Fluid-Rock Interaction, and Reactive Transport Modeling Required for Carbon Capture, and Storage (CCS)

AquaNRG's last 3 CCS workshops:  
**112 attendees, 13 countries, 46 Companies and Universities**




Capacity	Instructor	Date	Price
35 Participants	Babak Shafei, Ph.D.	06/07/2024	\$1,945 (industry) \$1,445 (academia)

## Who Should Attend

Geoscientists and engineers interested in CO<sub>2</sub> injection/storage modeling which is also outlined in EPA Class VI UIC regulatory and ISO 27914 voluntary guidelines.

## Objectives

This workshop will present a comprehensive review of geochemical methods to build fluid-rock interaction models for CO<sub>2</sub> injection/storage. Furthermore, geochemical and 1D reactive transport models using USGS's powerful and open-source geochemical simulator i.e., PHREEQC will be demonstrated.

## Workshop Content

This workshop will explore the best practices and tools for geochemical modeling of carbon dioxide injection/storage with the objective of mitigating risk associated with any CCS project. The outline of the workshop is as follows:

- Review of EPA Class VI UIC and ISO 27914 requirements (**9:00 am-9:30 am**)
- Principles of Geochemical Reactions and Processes, Kinetics vs. Equilibrium Formulation, Reactive Transport Modeling (**9:30 am-10:15 am**)
- Break (**10:15 am-10:30 am**)
- Introduction to PHREEQC, input/output/database files, acid-base, redox, ion exchange, and surface complexation reactions (**10:30 am-12:00 pm**)
- Lunch break (**12:00 pm- 13:00 om**)
- BUILD MODEL I: fluid-rock compatibility -> CO<sub>2</sub> dissolution/mineralization at different pressure and temperature conditions (**13:00 pm-14:30 pm**)
- Break (**14:30 pm-14:45 pm**)
- BUILD MODEL II: Advective, reactive and dispersive (1D) Transport of CO<sub>2</sub> (**14:45pm-16:00 pm**)