

Eawag Überlandstrasse 133 8600 Dübendorf Switzerland Phone +41 (0)58 765 53 61 Fax +41 (0)58 765 53 75 info@eawag.ch www.eawag.ch

Seminar Invitation - Darcy Lecture

Hydrogeochemistry in the 21st century

Speaker Prof. Chen Zhu, Dept. of Earth and Atmospheric Sciences, Indiana University, USA

When September 29, 2022 16.00 to 17.00, CEST

Where Eawag Dübendorf, room FC C20, or online via Zoom. Please contact <u>seminars@eawag.ch</u> for access details to join online.

Abstract Chemical and isotopic processes occur in every segment of the hydrological cycle. Hydrogeochemistry—the subdiscipline that studies these processes—has seen a transformation from "witch's brew" into a credible science. In the last two decades, we have seen tremendous progress in four research areas: the use of isotopic and chemical tracers to quantify groundwater recharge and submarine groundwater discharge, the kinetics of chemical reactions in aquifers, the mineral-water interface's control of contaminant fate and transport, and microbial processes' effects on groundwater chemistry.

Going forward, achieving net-zero emissions requires hydrogeologists to play our roles in storing billions of tons of carbon dioxide (CO₂) in minerals, soils, and aquifers, securing Earth materials for the transition from fossil fuels to renewable energies, and protecting water quality from these activities and under a changing hydrologic cycle. Hydrogeochemistry is front and center in efforts to address many important issues related to these challenges. As the research progresses, we will likely see watershed-scale models that closely link hydrogeochemistry to atmospheric processes and biogeochemical cycles. Advances in data science and machine learning will help hydrogeochemistry play a bigger role in water resources management.

Website: https://hydrogeochem.earth.indiana.edu

Link to Darcy-Lecture-series: https://www.groundwater.org/lecture/darcy/darcy-past-2020s.html