DEPARTMENT OF BIOLOGICAL AND ECOLOGICAL ENGINEERING

Fate and transport of PFAS in the vadose zone across scales: controlling processes, mathematical formulation, and practical modeling approaches

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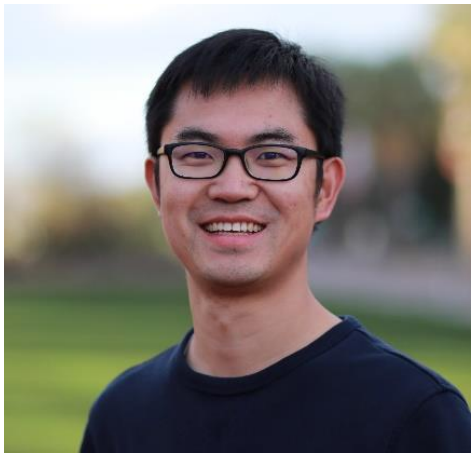
Room: KEC 1005



Dr. Bo Guo's research group webpage: https://guolab.arizona.edu/

ABSTRACT PFAS are emerging contaminants that have been widespread in the environment. A growing body of site investigations suggests that PFAS have accumulated significantly in soils at many contaminated sites, posing a long-term threat to contaminate the groundwater underneath. In this talk, I will discuss our recent work that aims to understand and quantify the primary processes that control the long-term leaching of PFAS. I will start by presenting a mathematical model that represents a set of PFAS-specific transport processes including concentration-dependent capillary pressure, and rate-limited and nonlinear adsorption at the air–water and solid–water interfaces. This will be followed by the discussion of additional complexities to test hypotheses formulated from field observations. Insights from these analyses allow us to develop simplified models with a focus on the primary processes that dominantly control PFAS leaching. The simplified models provide efficient and accurate screening-type tools for quantifying long-term PFAS leaching from soils to groundwater.

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