

PhD opening at the Pennsylvania State University in porous media physics

The Mehmani Research Group has one opening for a fully funded PhD student starting Fall 2024 in the Department of Energy and Mineral Engineering (www.eme.psu.edu) at the Penn State University. The successful candidate will conduct research on the modeling of reactive transport, machine learning, multiscale algorithms, and multi-resolution imaging of geomaterials.

The lab focuses on the fundamental physics of flow and deformation in porous media. Our goal is to bridge the controlling mechanisms rooted at the microscale to the emergent behaviors observed at the macroscale. A core part of our activities is directed towards devising multiscale algorithms and experimental imaging techniques that probe microscale processes and translate useful insights into Darcy-scale information. Our interests are driven by applications of porous media in energy and the environment. They include subsurface technologies such as H₂ storage, CO₂ sequestration, geothermal energy, natural gas, and manufactured devices such as fuel cells and batteries. Students will have the opportunity to contribute to questions of global and societal importance. Find more information at www.mehmaniresearchgroup.com.

A candidate with a strong background in one or more areas of computational fluid and/or solid mechanics, applied mathematics, computer programming, machine learning, and image analysis is sought. A MSc degree is a plus but not a requirement. The student will develop new algorithms, methods, and workflows for modeling and characterizing geologic porous media with extreme heterogeneity for applications related to geologic carbon storage. They will have the opportunity to conduct modeling and experimental work and collaborate with interdisciplinary researchers with engineering and geoscientific expertise. The student will also have access to state-of-the-art supercomputing facilities, and high-resolution imaging & characterization equipment in our lab.

To apply, please contact Yashar Mehmani via email (yzm5192@psu.edu) to discuss the research project. Attach the following to your email: unofficial transcripts, curriculum vitae, names and contacts of three references, and a brief personal statement that describes your motivation for joining our group and how you see your background fit the position. Applicants must meet the minimum admission requirements ([link](#)) set by The Graduate School and the EME department. **The application deadline for the Fall 2024 semester is January 5, 2024.** If the candidate plans to attend the upcoming American Geophysical Union (AGU) conference (Dec 11-15, 2023, [link](#)), please notify Yashar Mehmani to arrange an in-person interview or meeting.

Yashar Mehmani is an assistant professor in the Department of Energy and Mineral Engineering (EME) at the Pennsylvania State University ([link](#)). He is a co-funded faculty in the Institute of Energy and the Environment (IEE) ([link](#)) and an affiliates of the Institute for Computational and Data Science (ICDS) ([link](#)) and Department of Materials Science and Engineering's IGDP program ([link](#)). His research interests are broadly related to porous media flow and mechanics with a special focus on computing and scale translation. He received a BSc from Sharif University of Technology, Iran, a PhD from the University of Texas at Austin, and was a postdoctoral fellow and research scientist at the Energy Resources Engineering Department at Stanford University.