

Prof. Peter Kang's research lab (<http://pkkang.com>) in the Department of Earth Sciences at the University of Minnesota (UMN) is looking for one or more Ph.D. Students in the area of reactive transport in porous and fractured media for Fall 2019. This position will cover full tuition, approximately \$24,200 for the 12-month salary, and full benefits.

Prof. Kang's lab advances the fundamental understanding of fluid flow and reactive transport in porous and fractured media. We combine theory, high performance numerical simulation, and visual microfluidic experiments to understand how the coupling between multiple processes such as biogeochemical, thermal, and mechanical processes controls fluid flow and reactive transport across scales. Based on the understanding of the multi-scale phenomena, we develop predictive models for subsurface energy and environment applications such as contaminant transport, reservoir characterization, aquifer storage and recovery, geothermal energy production, nuclear waste disposal, and groundwater and surface-water interactions.

UMN is located in Minneapolis/St. Paul (i.e., Twin Cities), and the Twin Cities's economy is the 13th largest in the U.S. and ranks second in the Midwest with very convenient transportation, life, and job opportunities. A lot of Fortune 500 companies and 17 headquarters of them reside in the Twin Cities area.

UMN is ranked 8th in research among all public universities according to the National Science Foundation (NSF) Survey of Research and Development. UMN faculty and alumni have won 25 Nobel Prizes (30 if including researchers), which is ranked 2nd among all public universities in the United States. Minnesota Supercomputing Institute (MSI) is one of the top 5 university-owned supercomputer centers in the nation.

Interested bachelor or master students in earth sciences, (civil, environmental, mechanical, chemical, petroleum) engineering, physics, applied mathematics, or other closely-related disciplines are encouraged to submit their applications to the Department of Earth Sciences at UMN before the deadline of December 15, 2018 (<https://www.esci.umn.edu/programs/gradprospective>). Note that the application to the UMN Earth Sciences Program is very competitive: successful applicants are expected to have a very strong academic background, be highly motivated, and have strong interests in performing top-quality research and publishing in top-tier journals.

To join Prof. Kang's lab, a solid background in fluid mechanics, numerical methods for partial differential equations and computer programming skills are important. Background in hydrogeology or microfluidics is desired but not required. Prospective candidates are welcome to email Prof. Kang ([pkkang@umn.edu](mailto:pkkang@umn.edu)) with the following materials: a detailed academic CV (including a list of publications if applicable and GRE scores), transcripts, a brief statement that highlights the research interests and skills, and contact details of two/three references.