

Sahar Bakhshian

Professional Summary

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Professional Preparation

Academic Background

Ph.D., Chemical Engineering, University of Southern California, January 2018
M.Sc., Chemical Engineering, Sharif University of Technology, Tehran, Iran, August 2010
B.Sc., Chemical Engineering, Isfahan University of Technology, Isfahan, Iran, August 2007

Professional Appointments

Research Associate, Bureau of Economic Geology, The University of Texas at Austin (August 2019-Present)
Postdoctoral Fellow, Bureau of Economic Geology, The University of Texas at Austin (February 2018-August 2019)

Areas of Expertise

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Computational Fluid Dynamics (CFD)
Multiphase flow in porous media

Awards

Awards and Honorary Societies

Career Development Publication Award, 2019-2020
Career Development Publication Award, 2018-2019
Best Dissertation Award in Chemical Engineering, University of Southern California (USC), 2018
Best Poster Award at the Texas Advanced Computing Center (TACC) Symposium, 2018
Mork Family Department of Chemical Engineering Best Teaching Assistant Award, 2017
Ph.D. Merit Award, University of Southern California Women in Science & Engineering (USC WiSE), 2017
12th Annual Mork Family Department Student Symposium, Best Poster Presentation Award, University of Southern California, 2016
University of Southern California Women in Science & Engineering (USC WiSE) Travel Grant Recipient: 8th International Conference on Porous Media & Annual Meeting, Cincinnati, Ohio, USA, 2015
USC Mork Family Doctoral Fellowship, Support with Tuition and Stipend, 2013-2015

Presentations

Presentations

Modeling of convective carbon dioxide dissolution in porous media: from pore to Darcy scale: presented at American Geophysical Union Fall Meeting 2019, San Francisco, Calif., December 9-13, 2019.

Pore-scale study of spontaneous imbibition in fractured rocks using the lattice Boltzmann method: presented at American Geophysical Union Fall Meeting 2019, San Francisco, Calif., December 11, 2019.

A parallel pore-scale multiphase flow tool using the lattice Boltzmann method: presented at 72nd Annual Meeting of the American Physical Society Division of Fluid Dynamics, Seattle, Wash., November 23-26, 2019.

Modeling solutal convection in porous media: from pore to Darcy scale: presented at 72nd Annual Meeting of the American Physical Society Division of Fluid Dynamics, Seattle, Wash., November 23-26, 2019.

A high performance lattice Boltzmann solver with applications to multiphase flow in porous media: presented at TACCSTER 2019: Texas Advanced Computing Center Symposium for Texas Researchers, Austin, Tex., September 26-27, 2019.

Pore-scale simulation of wettability effects on CO₂ storage efficiency in deep saline aquifers: presented at InterPore2019: 11th Annual Meeting of the International Society for Porous Media, Valencia, Spain, May 6-10, 2019.

A parallel pore-scale simulator for multiphase flow in 3D digital rock images: presented at Rice Oil & Gas High Performance Computing Conference, Houston, Tex., March 4-6, 2019.

The impact of wettability heterogeneity on multiphase flow in realistic rock models: presented at American Geophysical Union Fall Meeting 2018, Washington, D.C., December 12, 2018.

Development of a parallel pore-scale fluid flow simulator with application to geological storage of CO₂: presented at TACCSTER 2018: Texas Advanced Computing Center Symposium for Texas Researchers, Austin, Tex., September 20-21, 2018.

Publications

Peer Reviewed Journal Articles

Bakhshian, S., Hosseini, S. A., and Lake, L. W., 2020, CO₂-brine relative permeability and capillary pressure of Tuscaloosa sandstone: effect of anisotropy: *Advances in Water Resources*, v. 135, no. 103464, 13 p., <http://doi.org/10.1016/j.advwatres.2019.103464>.

Bakhshian, S., Murakami, M., Hosseini, S. A., and Kang, Q., 2020, Scaling of imbibition front dynamics in heterogeneous porous media: *Geophysical Research Letters*, v. 47, no. e2020GL087914, 10 p., <http://doi.org/10.1029/2020GL087914>.

Bakhshian, S., Rabbani, H. S., Hosseini, S. A., and Shokri, N., 2020, New insights into complex interactions between heterogeneity and wettability influencing two-phase flow in porous media: *Geophysical Research Letters*, v. 47, no. e2020GL088187, 10 p., <http://doi.org/10.1029/2020GL088187>.

Feng, D., Wu, K., Bakhshian, S., Hosseini, S. A., Li, J., and Li, X., 2020, Nanoconfinement effect on surface tension: perspectives from molecular potential theory: *Langmuir*, v. 36, no. 30, p. 8764-8776, <http://doi.org/10.1021/acs.langmuir.0c01050>.

Bakhshian, S., and Hosseini, S. A., 2019, Pore-scale analysis of supercritical CO₂-brine immiscible displacement under fractional-wettability conditions: *Advances in Water Resources*, v. 126, p. 96-107, <http://doi.org/10.1016/j.advwatres.2019.02.008>.

Bakhshian, S., and Hosseini, S. A., 2019, Prediction of CO₂ adsorption-induced deformation in shale nanopores: *Fuel*, v. 241, p. 767-776, <http://doi.org/10.1016/j.fuel.2018.12.095>.

Bakhshian, S., Hosseini, S. A., and Shokri, N., 2019, Pore-scale characteristics of multiphase flow in heterogeneous porous media using the lattice Boltzmann method: Scientific Reports, v. 9, no. 3377, 13 p., <http://doi.org/10.1038/s41598-019-39741-x>.

Dashtian, H., Bakhshian, S., Hajirezaie, S., Nicot, J.-P., and Hosseini, S. A., 2019, Convection-diffusion-reaction of CO₂-enriched brine in porous media: a pore-scale study: Computers and Geosciences, v. 125, p. 19-29, <http://doi.org/10.1016/j.cageo.2019.01.009>.

Published Abstracts

Bakhshian, S., and Hosseini, S. A., 2019, A parallel pore-scale multiphase flow tool using the lattice Boltzmann method (abs.): Bulletin of the American Physical Society, 72nd Annual Meeting of the American Physical Society Division of Fluid Dynamics, v. 64, no. 13, abs. no. NP05.00120, 1 p.

Hesse, M., Wen, B., Bakhshian, S., and Hosseini, S., 2019, Modeling solutal convection in porous media: from pore to Darcy scale (abs.): Bulletin of the American Physical Society, 72nd Annual Meeting of the American Physical Society Division of Fluid Dynamics, v. 64, no. 13, abs. no. B38.00006, 1 p.

Murakami, M., Bakhshian, S., and Hosseini, S., 2019, A high performance lattice Boltzmann solver with applications to multiphase flow in porous media (ext. abs.): TACCSTER 2019 Proceedings, <http://doi.org/10.26153/tsw/6851>.