

CURRICULUM VITAE

Mojdeh Rasoulzadeh

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Professional Employment.....

Assistant Professor, The University of Alabama, Sep 2017-present
Research Engineer, Ecole des Ponts, ParisTech affiliated to Total CSTJF, Pau, France, 2016-2017
Post-Doctoral Researcher, Schlumberger SPRC, Clamart, France: Jan 2015 to Jan 2016
Post-Doctoral Researcher, French National Center for Scientific Research, CNRS, LEMTA, Nancy, France, Sep 2012 to Sep 2014

Education.....

Ph.D., Mechanics and Energetics, University of Lorraine, 2008-2011
Dissertation: *Nonlocal models of flow in multi-scale porous media*, adviser: Prof. Mikhail Panfilov
M.Sc., Mechanical Engineering, Sharif University of Technology, 2001-2004
B.S., Mechanical Engineering, University of Tehran, 1997-2001

Research Interests.....

Effective models of flow in multiscale heterogeneous fractured porous media
Coupled thermo-hydro-mechanical simulation of highly heterogeneous porous media
Numerical simulation of flow and transport in heterogeneous deformable porous media
Subsurface flow and transport modeling
Groundwater-surface water interactions in karst aquifers
Underground storage of hydrogen

Publications.....

Rasoulzadeh, M., & Kuchuk, F. J. (2017). Effective permeability of a porous medium with spherical and spheroidal vug and fracture inclusions. *Transport in Porous Media*, 116(2), 613-644.

Hagemann, B., **Rasoulzadeh, M.**, Panfilov, M., Ganzer, L., & Reitenbach, V. (2016). Hydrogenization of underground storage of natural gas. *Computational Geosciences*, 20(3), 595-606.

Hagemann, B., **Rasoulzadeh, M.**, Panfilov, M., Ganzer, L., & Reitenbach, V. (2015). Mathematical modeling of unstable transport in underground hydrogen storage. *Environmental Earth Sciences*, 73(11), 6891-6898.

Rasoulzadeh, M., Panfilov, M., Kuchuk, F., (2014). Effect of memory accumulation in three-scale fractured-porous media. *International Journal of Heat and Mass Transfer* (76), 171-183

Panfilov, M., **Rasoulzadeh, M.**, (2013). Appearance of the nonlinearity from the nonlocality in diffusion through multiscale fractured porous media, *Computational Geosciences* (17), 269–286

Panfilov, M., & **Rasoulzadeh, M.** (2010). Interfaces of phase transition, disappearance, and method of negative saturation for compositional flow with diffusion and capillarity in porous media. *Transport in porous media*, 83(1), 73-98.

Publications in review.....

Rasoulzadeh, M., Panfilov, M., (2018). Asymptotic Solution of the Problem of Viscous/Inertial Flow in Wavy Channels with Permeable Walls, *under preparation to submit to the Journal of Physics of Fluids*.

Rasoulzadeh, M., Kuchuk, F., (2018). Pressure Transient Behavior of High-Fracture Density Reservoirs (Dual-Porosity Models), *submitted to Transport in Porous Media*.

Conferences and Seminars.....

Geomechanics Case Study and Methodology, SKUA-GOCAD User Group Meeting, Paris June 2017

Hydrogenization of underground storage of natural gas: impact of hydrogen on bio-chemical transformations of stored gas (Hagemann B., Rasoulzadeh M., Panfilov, Leonhard Ganzer, Victor Reitenbach), ECMORXIV, September 2014, Refereed.

Conceptual and numerical model of hydrogen migration through water with biotic reactions in a radioactive waste storage. Effects of self-organisation (Michel Panfilov, Mojdeh Rasoulzadeh), Journées MOMAS multiphasiques, 7- 9 Oct 2013.

Biotic Reactions in Underground Hydrogen Storage (M. Rasoulzadeh, M. Panfilov), H2STORE, second meeting, Goslar, Germany, June 2013.

Self-organization phenomena in bio-reactive transport of underground H₂ storage (Mojdeh Rasoulzadeh, Mikhail Panfilov), JEMP, Marseille, Nov 2012.

Phénomènes d'auto-organisation dans le transport bio-réactif multi-composant en milieu poreux: application au Stockage Souterrain de l'Hydrogène (Michel Panfilov, Mojdeh Rasoulzadeh, Aman Toleukhanov), Ateliers Scientifiques ICEEL 10 mai 2012.

Analytical and Numerical Methods for Multiscale Systems, (Mikhail Panfilov, Mojdeh Rasoulzadeh), MATCH Workshop, Heidelberg, Germany, 14-17 Feb 2011.

Asymptotic and numerical models of free interfaces inside a channel with permeable walls in porous medium, (M. Rasoulzadeh, M. Panfilov, F. Kuchuk), JEMP , 20,21 Oct 2010, Nancy.

Method of Negative Saturations for Multi-component Flow with Interfaces of Phase Disappearance (Anahita Abadpour, Mojdeh Rasoulzadeh, Mikhail Panfilov), Journée Scientifiques du GDR MoMas Marseille, 23-25 November 2009.

Nonlinear reactive waves in H₂ underground storage and dynamics of bacteria population, (Yury Mizyakin, Mikhail Panfilov, Mojdeh Rasoulzadeh) 8-12 June 2009, MAMERN.

Academic Experience.....

Reviewer for: *The Canadian Journal of Chemical Engineering, Journal of Petroleum Engineering*

Journal of Computational Geosciences, Journal of Transport in Porous Media.

Member of Lab Council: Representative of the PhD students and post docs for 2 years (2009-2011) in the council of LEMTA.

Teaching:

- (1) Applied differential equations, (2) Calculus, (3) Discrete mathematics, (4) Unconventional reservoirs, (5) Two-phase flow simulation lab, (6) Transport in porous media, (7) Numerical Methods

Mentoring and Supervising:

- (1) Two days ABAQUS-SKUA training, TOTAL, Pau, France, 2017.
- (2) Master project supervisor, Total CSTJF, 2017, “Geomechanical Grid Mapping and Upscaling”.
- (2) Co-adviser of master final project, 2014, Lorraine University France, “Fingering Appearance during Underground Hydrogen Storage”.
- (3) Co-adviser of master 2nd year project, LEMTA, Nancy, France, 2013, “Study the Effect of Bacterial Metabolic Lag during Underground Storage of Natural Gas”.
- (4) Co-adviser of master final project, LEMTA, Nancy, France, 2013, “Modeling of Two-Stage Flow in a Capillary by Lattice Gas Approach”.
- (5) Co-adviser of a master final project, LEMTA, Nancy, France, “Numerical Analysis of Regimes of Gas Rise in Underground Aquifer with Barriers”.
- (6) Supervision of master final project ENSG, Master GPIR, LEMTA, Nancy, France, 2013, “Calculation of the well productivity index for conical shaped horizontal wells”.

Member of thesis committee:

- (1) Examiner, LEMTA, Nancy, France, 2013, “Advancements of the Method of Negative Saturation for Multiphase Multicomponent Flow With Gravity and Diffusion”.

Tutorials:

- (1) Guidelines to Add Multiphysics Modules to Open Source DuMux, LEMTA, France, 2014.
- (2) Coupled Reservoir Geomechanical Modeling Using Eclipse/ABAQUS, Total CSTJF, 2017.

Trainings, field trips and workshops attended.....

2016 Basics of reservoir geomechanical simulation in GEOS (Lawrence Livermore National Laboratory), Pau, France.

2016 Basics of reservoir geomechanical simulation by ABAQUS (DASSAULT System, SIMULIA), Pau, France

2016 Basics of reservoir geomechanical simulation by Petrel RG (Schlumberger), Pau, France.

2012 Numerical simulation of flow and transport in porous media by DuMux, Stuttgart, Germany.

2004 Fundamental project management, Prime Learning online training

2004 Professional project management, Prime Learning online training

Awards.....

2018 Research Grant Committee, awarded by Office of the Vice President for Research and Economic Development (OVPRED), University of Alabama.

2010 Safety Award for Pedestrian Safety Simulation

2009 Human Powered Vehicle (HPV), Award in Design and Prototyping

Skills.....

Programming Languages: C++, Matlab

Operating Systems: Linux, and Windows

Software: Eclipse, COMSOL Multi-Physics, PHREEQC, SKUA, ABAQUS

Open source codes: DuMux

References.....

Prof. Amade Poua

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LEMTA Lab

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