Dr. Hamid Emami-Meybodi

Assistant Professor of Petroleum and Natural Gas Engineering
Department of Energy and Mineral Engineering and EMS Energy Institute
152 Hosler Building, University Park, PA 16802
Tel: (814) 863-3987; Email: emami@psu.edu

EDUCATION

Ph.D. in Petroleum Engineering, University of Calgary, Alberta, Canada, **2015**
M.Sc. in Petroleum Engineering, University of Calgary, Alberta, Canada, **2011**
M.Eng. in Reservoir Engineering, University of Calgary, Alberta, Canada, **2008**
M.Sc. in Chemical Engineering, Petroleum University of Technology, Tehran, Iran, **2007**
B.Sc. in Petroleum Engineering, Petroleum University of Technology, Ahwaz, Iran, **2005**

PROFESSIONAL APPOINTMENTS

10/2015 –	**Assistant Professor** Department of Energy and Mineral Eng., Penn State University, USA
06/2015 – 09/2015	**Postdoctoral Fellow** Department of Geoscience, University of Calgary, Canada
09/2009 – 04/2015	**Research Assistant** Dept. of Chemical & Petroleum Eng., University of Calgary, Canada
08/2014 – 01/2015	**Visiting Research Fellow** CSIRO, Melbourne, VIC, Australia
08/2013 – 12/2013	**Reserves Evaluation Engineer** Ryder Scott Company, Calgary, Canada
09/2008 – 08/2009	**Research Assistant** PTRC, University of Regina, Canada
01/2007 – 08/2008	**Research Assistant** PUT Research Centre, Tehran, Iran

TEACHING

Pennsylvania State University (USA): Unconventional Resources Analysis (PNG 555); Surface Production Engineering (PNG 480); Production Engineering Laboratory (PNG 482)

University of los Andes (Colombia): Unconventional Reservoir Engineering

University of Calgary (Canada): Behaviour of Liquids, Gases and Solids Lab (ENGG 201); Well Testing (ENPE 509); Production Engineering (ENPE 533); Introduction to Reservoir Eng. (ENPE 523)

University of Regina (Canada): Economical Evaluation of Oil and Gas Projects

National Gas Company (Iran): Natural Gas Distribution Systems

RESEARCH ACTIVITIES

Research Interests

- Fluid flow and transport phenomena in porous media with applications to unconventional reservoirs, EOR, and geological storage of CO_2
- Production data and well performance analysis of unconventional reservoirs

Current Projects

- Solvent injection in ultra-tight reservoirs
- Flowback rate transient analysis of multi-fractured horizontal wells
- Artificial neural network models for chemical enhanced oil recovery processes
- Instability of convective dissolution of CO_2 in deep saline aquifers

Completed Projects

- Solubility trapping of carbon dioxide in deep saline aquifers
- Production data analysis of liquid-rich gas reservoirs
- Mixing induced by buoyancy-driven flows in porous media
- Geomechanics consideration in hydraulic fracturing
- Modeling of heat and mass transfer near wellbore formation during steam injection
- Experimental study of polymer flooding using one-quarter five-spot glass micromodels
- Impact of reservoir fluid properties on gas-lift design

FUNDED GRANTS

- Maximization of permanent trapping of CO_2 in geological formations ($25,000): Penn State Institutes of Energy and the Environment, Penn State University, 04/01/2018 – 06/30/2019, PI.
- Experimental quantification and modeling of coupled molecular diffusion and advective flow in the Bakken formation ($130,276): Hess Corporation, 01/01/2018 – 12/31/2018, Co-PI.
- Unconventional gas reservoirs: Production data analysis ($5000): Gladys Snyder Grant, College of Earth and Mineral Sciences, Penn State University, 01/2016 – 12/2016, Single-PI.

HONORS AND AWARDS

- SPE Regional Reservoir Description and Dynamics Award, 2018
- Endeavour Research Fellowship, Department of Education, Australia, 2014
- Alberta Innovates Technology Futures Fellowship, AITF, Canada, 2014
- Engineering Graduate Excellence Scholarship, University of Calgary, 2014
- Eyes High International Doctoral Scholarship, University of Calgary, Canada, 2013
- PennWest Graduate Excellence Scholarship, PennWest Exploration, Canada, 2012

- OMAE Graduate Excellence, American Society of Mechanical Engineering, 2012
- Petroleum Systems Graduate Excellence, University of Regina, Canada, 2009
- Schulich Student Activities Fund, University of Calgary, Canada, 2013
- Faculty of Graduate Studies Travel Award, University of Calgary, Canada, 2013
- Best Poster Prize, University of Warwick, UK Energy Research Centre, 2013
- UKERC Energy and Environment School, UK Energy Research Centre, 2013
- CMC Travel Award, Carbon Management Canada, 2013
- NIOC Dual-Degree Program Scholarship, National Iranian Oil Company, 2005
- NIOC Bachelor Degree Scholarship, National Iranian Oil Company, 2001

PUBLICATIONS

Peer-Reviewed Articles

1. M. Cronin, **H. Emami-Meybodi**, R. T. Johns (2018) Diffusion-dominated proxy model for solvent injection in ultra-tight oil reservoirs, SPE-190305-PA, *SPE J.*
2. **H. Emami-Meybodi** (2017) Dispersion-driven instability of mixed convective flow in porous media, *Phys. Fluids*, 29, 094102
3. M. Singh, M. Zhang, **H. Emami-Meybodi**, and L. F. Ayala (2017) Use of rescaled exponential models for boundary-dominated liquid-rich gas flow analysis under variable bottomhole pressure conditions, *J. Nat. Gas Sci. Eng.*, 46, 793–816
4. **H. Emami-Meybodi** (2017) Stability analysis of dissolution-driven convection in porous media, *Phys. Fluids*, 29, 014102
5. S. M. Jafari-Raad, **H. Emami-Meybodi** and H. Hassanzadeh (2016) On the choice of analogue fluids in CO_2 convective dissolution experiments, *Water Resour. Research*, 52, 4458–4468
6. **H. Emami-Meybodi**, H. Hassanzadeh, C. P. Green and J. Ennis-King (2015) Convective dissolution of CO_2 in saline aquifers - Progress in modeling and experiments, *International Journal of Greenhouse Gas Control*, 40, 238–266
7. **H. Emami-Meybodi**, H. Hassanzadeh and J. Ennis-King (2015) CO_2 dissolution in presence of background flow of saline aquifers, *Water Resources Res.*, 51, 2595–2615
8. **H. Emami-Meybodi** and H. Hassanzadeh (2015) Two-phase convective mixing under a buoyant plume of CO_2 in deep saline aquifers, *Adv. Water Resour.*, 76, 55–71
9. **H. Emami-Meybodi**, H. K. Saripalli and H. Hassanzadeh (2014) Formation heating by steam circulation in a horizontal wellbore, *Int. J. Heat Mass Transfer*, 78, 886–992
10. **H. Emami-Meybodi** and H. Hassanzadeh (2013) Stability analysis of two-phase buoyancy-driven flow in presence of capillary transition zone, *Phys. Review E*, 87, 033009
11. **H. Emami-Meybodi** and H. Hassanzadeh (2013) Mixing induced by buoyancy-driven flows in porous media, *AIChE J.*, 59 (4) 1378–1389

12. **H. Emami-Meybodi** (2012) Nazari Moghaddam and Rostami's reply to my comment on their paper "Quantification of density-driven natural convection for dissolution mechanism in CO_2 sequestration", *Transp. Porous Media*, 93 (3) 655–656
13. **H. Emami-Meybodi** (2012) Comments on the paper "Quantification of density-driven natural convection for dissolution mechanism in CO_2 sequestration" by R. Nazari Moghadam et al. (2011), *Transp. Porous Media*, 93 (1) 171–174
14. **H. Emami-Meybodi** and H. Hassanzadeh (2011) Hydrodynamic dispersion in steady buoyancy-driven geological flows, *Water Resour. Res.*, 47, W12504 13PP
15. **H. Emami-Meybodi**, R. Kharrat and X. Wang (2011) Study of microscopic and macroscopic displacement behaviors of polymer solution in water-wet and oil-wet media, *Transp. Porous Media*, 89 (1) 97–120
16. **H. Emami-Meybodi**, R. Kharrat and M. Nasehi Araghi (2011) Experimental studying of pore morphology and wettability effects on microscopic and macroscopic displacement efficiency of polymer flooding, *J. Pet. Sci. Eng.*, 78(2) 347–363
17. **H. Emami-Meybodi**, R. Kharrat and B. Yadali Jamaloei (2011) Effect of orientation of strata on macroscopic sweep efficiency of water/polymer flooding in layered porous media, *J. Porous Media*, 14 (9) 761–776

Conference Papers

18. F. Zhang and **H. Emami-Meybodi** "Evaluation of Changes in Fracture Properties during Production Using Rate Transient Analysis", SPE- 191817, *SPE Eastern Regional Meeting*, Pittsburg, PA, USA, October 2018.
19. M. Cronin, **H. Emami-Meybodi**, R. T. Johns "Diffusion-dominated proxy model for solvent injection in ultra-tight oil reservoirs", SPE-190305, *SPE Improved Oil Recovery*, Tulsa, OK, USA, April 2018.
20. **H. Emami-Meybodi** and H. Hassanzadeh, Two-phase convective mixing of carbon dioxide in deep saline aquifers: Effect of capillary transition zone, *Canadian Chemical Engineering*, Fredericton, NB, Canada, October 2013.
21. M. Rafiee, M. Y. Soliman, E. Pirayesh and **H. Emami-Meybodi**, Geomechanical considerations in hydraulic fracturing designs, SPE 162637, *SPE Canadian Unconventional Resources*, Calgary, AB, Canada, November 2012.
22. **H. Emami-Meybodi**, R. Kharrat and M. Ghazanfari, Effect of heterogeneity of layered reservoirs on polymer flooding: an experimental approach using five-spot glass micromodel, SPE 113820, *EUROPEC,* Rome, Italy, June 2008.

MEMBERSHIP IN PROFESSIONAL SOCIETIES

- American Physical Society (APS), since 2015
- American Geophysical Union (AGU), since 2014
- Canadian Society for Chemical Engineering (CSChE), since 2013
- Association of Engineers Geologists and Geophysicists Alberta (APEGA), since 2012
- Society of Petroleum Engineers (SPE), since 2005

PROFESSIONAL SOCIETY COMMITTEES

- Associate editor for Journal of Petroleum Exploration and Production Technology, 2016 –
- Faculty advisor of the SPE chapter at Penn State, 2018 –
- External examiner for petroleum engineering program of University of Trinidad and Tobago, 2016 –
- Invited reviewer for several funding agencies and scientific journals, 2014 –
- Guest Editor of Special Issue of "Fundamentals of CO2 Storage in Geological Formations" for the Journal of Fluids, 2018.

RESEARCH SUPERVISION

1. **Zizhong Liu***, Diffusive transport in ultra-tight rocks*, PhD degree, Fall 2022 (expected).
2. **Fengyuan Zhang**, *Multi-phase flowback of multi-fractured horizontal wells*, PhD degree, Fall 2021 (expected).
3. **Michael Cronin**, *CO_2-EOR in shale oil reservoirs*, PhD degree, Fall 2019 (expected). Co-advisor: Russell T. Johns
4. **Mohammad Abdullah**, Artificial neural network models for chemical enhanced oil recovery processes, MSc degree, Fall 2018 (expected). Co-advisor: T. Ertekin
5. **Yun Yang**, *Mathematical development for flowback rate transient analysis*, MSc degree, Fall 2017. Co-advisor: Luis F. Ayala
6. **Madhu Singh**, *Density-based rescaled exponential model for gas-condensate reservoirs during boundary-dominated flow*, MSc degree, Spring 2017.