Seyyed Abolfazl. Hosseini

Professional Summary

November 6, 2025

Business address:	The University of Texas at Austin
	Bureau of Economic Geology
	10100 Burnet Rd., Bldg. 130
	Austin, TX 78758
Telephone:	(512) 471-2360
E-mail address:	seyyed.hosseini@beg.utexas.edu

Professional Preparation

Academic Background

Ph.D. Petroleum Engineering, University of Tulsa, Oklahoma, 2008

M.S. Chemical Engineering, Biotechnology, Sharif University of Technology, Tehran, Iran, 2005

B.S. Chemical Engineering, University of Isfahan, Isfahan, Iran, 2002

Professional Appointments

Research Professor, Bureau of Economic Geology, The University of Texas at Austin (September 2023-Present)

Senior Research Scientist, Bureau of Economic Geology, The University of Texas at Austin (September 2021-Present)

Research Scientist, Bureau of Economic Geology, The University of Texas at Austin (October 2016-Present)
Fluid flow modeling in porous media, with focus on EOR and unconventional reservoirs.

Research Associate, Bureau of Economic Geology, The University of Texas at Austin (2010-September 2016)
Fluid flow modeling in porous media, with focus on EOR and unconventional reservoirs.

Postdoctoral Research Associate, Harold Vance Department of Petroleum Engineering, Texas A&M University (November 2009 - 2010). Investigating theory and application of diffusive time of flight for drainage volume calculations in tight gas reservoirs. Drainage volumes calculated by this approach is used to optimize the well placement in tight gas reservoirs to minimize the interference of the production wells. Developing a new Petrel plug-in (SWIFT) for upgridding of geological models into the simulation models.

Research Assistant, Department of Petroleum Engineering, University of Tulsa (December 2008 - November 2009). Developing a new technique for upgridding to preserve dynamic flow behavior of fine scale geomodels. Developing reservoir simulation and automatic history matching codes based on adjoint and Ensemble Kalman Filter (EnKF) methods for uncertainty analysis.

Reservoir Simulation Engineer, Kelkar and Associates Inc., Tulsa, Oklahoma (December 2008 - November 2009). Reservoir simulation and history matching for multiple reservoirs, clastic and carbonate reservoirs including black oil and compositional simulation. Structural and property modeling of 3D static geomodels followed by upscaling to simulation models. Developing a new method for upgridding of reservoir models and implementing the new method into a commercial Petrel plug-in (CONNECT).

Areas of Expertise

Areas of Expertise

Black oil and Compositional reservoir simulation

Black oil and compositional reservoir simulation, uncertainty analysis and history matching using commercial software packages

CO_2-EOR and sequestration analytical and numerical modeling

Computer skills: Simulation software--Geoquest (Eclipse, PVTi), CMG (IMEX GEM), PipeSim, HYSYS; Modeling software--Petrel, RMS; Programming software--MATLAB, FORTRAN, Visual-Basic, C#, Delphi

History matching and inverse problem

Lost gas estimation and gas fractionation in unconventional formations

Multiphase fluid flow modeling in conventional and unconventional settings

Pressure transient analysis applications in CO_2-EOR fields for characterization and monitoring

Shale gas fluid flow modeling

Upscaling and upgridding of geological models to simulation models

Awards

Awards and Honorary Societies

The Joseph C. Walter Jr. Excellence Award in recognition of outstanding service and special contributions to teaching and research programs, 2025-2026

Phi Kappa Phi Honorary Society, 2008-Present

2024 Tinker Family BEG Publication Award, Exemplary Publication of Scientific or Economic Impact, for timely and foundational work toward CO_2 storage security, 2024

Best paper award at 2013 COMSOL Conference, Boston, MA, October 2013-October 2013

Career-Development Publications Award, awarded by the GAAC, BEG, 2011

Exceptional Talented Students Ph.D. scholarship, 2006-2008

Best Paper Award, 9th Iranian National Chemical Engineering Congress, Tehran, Iran, 2005

Ranked 4th in Nationwide Chemical Engineering-Biotechnology M.S. Exam among more than 4000 participants, 2003

Top chemical engineering undergraduate student award, University of Isfahan, Iran, 2002

Service

External Committees Participation

Member, Editorial Board Committee, Bureau of Economic Geology, April 1, 2019-Present

Director, Carbon Capture and Storage Section, Society of Petroleum Engineers, October 1, 2018-Present

Committee Member, SWNA Region Award Selection Committee, Society of Petroleum Engineers, March 1, 2018-Present

Member, Society of Petroleum Engineers Opinion Panel, Society of Petroleum Engineers, June 1, 2013-Present

Member, PhD dissertation committee, Sayantan Bhowmik, Petroleum Engineering (expected 2014), January, 2013 - present

Member, Grants, Appointments. & Awards Committee, BEG, February 2013-February 2016

Chair, Risk Assessment and Monitoring Techniques for Geological CO2 Sequestration (sessions I, II, and III), American Geophysical Union Fall Meeting, San Francisco, December 14-18, 2015

Co-Chair, Geological CO2 Storage Monitoring From Injection Zone to Vadose Zone: Characterization, Detection Methods, and Field Applications, American Geophysical Union Fall Meeting, , San Francisco, California, December, 2012

Co-Chair, Geological CO2 Storage Monitoring From Injection Zone to Vadose Zone: Characterization, Detection Methods, and Field Applications, GSA Annual Meeting and Exposition, , Charlotte, North Carolina, November, 2012

Proposal Review Panels Participation

Computational Geosciences (Article), 2013

Greenhouse Gases: Science and Technology (Article), 2013

Journal of Fuel (Article), 2013

Journal of Petroleum Science and Engineering (Article), 2013

SPE Journal (Article), 2013

AIChE Journal (Article), 2012

Computational Geosciences (Article), 2012

Journal of Petroleum Science and Engineering (Article), 2012

Journal of Porous Media (Article), 2012

SPE Reservoir Evaluation & Engineering-Formation Evaluation (Article), 2012

Teaching and Advising

University Courses Taught

Applied Subsurface Geology: University of Texas at Austin, May 1-15, 2015.

Continuing Education Courses Taught

Class VI Reservoir Modeling Considerations: presented to Louisiana Department of Natural Resources, online workshop, November 10, 2020.

Geologic Storage of CO2 in Saline Aquifers: presented to The Clean Energies Department in Mexico's Energy Ministry (SENER), presented at Specialized CCUS capacity development workshop, National Autonomous University of Mexico (UNAM), April 24-28, 2017.

CO2 storage and enhanced oil recovery: presented at AAPG Southwest Section, Fort Worth, Texas, May 23, 2012.

Student Committee Supervision

Graduate Assistant, Master's, Dissertation Committee, Shadya Taleb Restrepo, The University of Texas at Austin, 2021

Student Committee Participation

Member, Ph.D., Dissertation Committee, Reza Ershadnia, Understanding of Methane Fate and Transport in Groundwater, Department of Geology, University of Cincinnati, Cincinnati, Ohio, 2022

Member, Ph.D., Dissertation Committee, Pooneh Hosseininoosheri, CO2 Trapping Mechanisms Assessment Using Numerical and Analytical Methods, Department of Civil, Architectural, and Environmental Engineering, Cockrell School of Engineering, The University of Texas at Austin, Austin, Tex., 2020

Member, Ph.D. dissertation committee, Hojung Jung, Analyses of Coupled Thermo-Chemo-Mechanical Processes for Safe Carbon Geological Storage, The University of Texas at Austin, Petroleum Engineering, 2017

Member, Ph.D. Dissertation Committee, Sayantan Bhowmik, Particle Tracking Proxies for Prediction of CO2 Plume Migration Within a Model Selection Framework, University of Texas at Austin, Petroleum Engineering, 2013

Presentations

Invited Presentations

A Proposed 4-Phase Workflow for Defining Permit-Ready Locations for Large-Volume CO2 Injection and Storage: presented to American Geophysical Union, presented at AGU 2024 Conference, Washington, DC, December 11, 2024.

Low Carbon Strategies and Future IOR Opportunities (plenary): presented to Society of Petroleum Engineers, presented at Improved Oil Recovery Symposium, Tulsa, Okla., August 31, 2020.

EASiTool for storage capacity estimation: presented at 2nd International Workshop on Offshore CO2 Geologic Storage, Beaumont, Tex., June 19-20, 2017.

Application of pressure transient analysis for leakage detection: presented to United States Geological Survey, Reston, VA, July 20-21, 2016.

Diffusivity tomography with harmonically modulated pressure signals to detect CO2 leakage in above zone monitoring interval: presented at Combined Meeting of the IEAGHG Modelling and Monitoring Networks, Edinburgh, Scotland, July 6-8, 2016.

Presentations

A data analytics and machine learning study on site screening of CO2 geological storage in depleted oil and gas reservoirs in the Gulf of Mexico: presented to Industry technical session, presented at SPE Annual Technical Conference and Exhibition, San Antonio, October 16-18, 2023.

A machine learning study on CO2 storage prediction and decision-making in depleted oil and gas reservoirs in the Gulf of Mexico: presented to Industry technical session, presented at CCUS 2023, Houston, April 25, 2023.

Data Analytics of BOEM Dataset for CO2 Storage in Gulf of Mexico: presented to Industry Sponsor Meeting, presented at 2023 Joint Annual GoMCarb - SECARB Offshore Partnerships' Meeting, Austin, TX, April 5-7, 2023.

Application of machine learning for fast prediction of CO2 plume and pressure buildup in geological CO2 storage: presented at GeoGulf 2021, Austin, October 27-29, 2021.

Pressure Crosscutting Working Group Ppdate in Machine Learning Applications for SMART Initiative: presented to U.S. Department of Energy, presented at SMART Annual Review, online workshop, November 2-3, 2020.

Hydrogeological Modeling and Pore Pressure Characterization of Delaware Mountain Group in the Delaware Basin, Texas and New Mexico, abstract no. H51L-1640: presented to American Geophysical Union, December 9-13, 2019.

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.

The U.S. Gas Flooding Experience: CO2 Injection Strategies and Impact on Ultimate Recovery: presented at 38th annual workshop and symposium on EOR, Riviera Maya, Mexico, September 26-30, 2017.

Enhanced Analytical Simulation Tool for CO2 Storage Capacity Estimation: presented at Carbon Storage and Oil and Natural Gas Technologies Review Meeting, Pittsburgh, Pa., August 16-18, 2016.

Cranfield Project, Southeast Regional Carbon Sequestration Partnership: presented to U.S. Department of Energy, presented at Carbon Storage R&D Project Review Meeting, Pittsburgh, PA, August 18-20, 2015.

Enhanced Analytical Simulation Tool for CO2 Storage Capacity Estimation and Uncertainty Quantification: presented to U.S. Department of Energy, presented at Carbon Storage R&D Project Review Meeting, Pittsburgh, PA, August 18-20, 2015.

Pressure Monitoring, Field Observations and Interpretation Challenges: presented at IEAGHG 10th Monitoring Network Meeting, Lawrence Berkeley National Laboratory, Berkeley, CA, June 10-12, 2015.

Enhanced Analytical Simulation Tool (EASiTool) for CO2 Storage Capacity Estimation and Uncertainty Quantification: presented to U.S. Department of Energy, presented at 2014 Carbon Storage Per Review Meeting, Pittsburgh, PA, August 12-14, 2014.

Pressure Transient Analysis for Monitoring of CO2 Leakage in Brine Aquifers: presented to the International Society for Porous Media, presented at 6th International Conference on Porous Media, Milwaukee, WI, May 27-30, 2014.

Site characterization and reservoir history matching for geological CO2 sequestration at the S3 site: presented at 11th Annual Carbon Capture, Utilization, and Sequestration Conference, Pittsburgh, Pennsylvania, May 2, 2012.

Temperature monitoring at SECARB Cranfield Phase 3 site using distributed temperature sensing (DTS) technology: poster presented at 11th Annual Carbon Capture, Utilization, and Sequestration Conference, Pittsburgh, Pennsylvania, May 1, 2012.

Site characterization and history matching for S3 site: presented at Conference on Carbon

Capture and Sequestration, Pittsburgh, Pennsylvania, April 1-3, 2012.

Analytical studies of brine reinjection during CO2 sequestration in deep aquifers: poster presented at Conference on Carbon Capture and Sequestration, CCS Impact on Water Resources, Pittsburgh, Pennsylvania, May 2-5, 2011.

Analytical studies of brine reinjection during CO2 sequestration in deep aquifers: poster presented at Conference on Carbon Capture and Sequestration, CCS Impact on Water Resources, Pittsburgh, Pennsylvania, May 2-5, 2011.

Carbon dioxide sequestration at Cranfield--analysis of injection and observation well fluid pressure, temperature and density measurements: poster presented at Conference on Carbon Capture and Sequestration, CCS Impact on Water Resources, Pittsburgh, Pennsylvania, May 2-5, 2011.

Carbon dioxide sequestration at Cranfield--analysis of injection and observation well fluid pressure, temperature and density measurements: presented at Conference on Carbon Capture and Sequestration, CCS Impact on Water Resources, Pittsburgh, Pennsylvania, May 2-5, 2011.

Modeling EOR oil production without an oil phase in the context of CCS: step-by-step conversion from a 3-phase system to a 2-phase CO2-brine system: poster presented at Conference on Carbon Capture and Sequestration, CCS Impact on Water Resources, Pittsburgh, Pennsylvania, May 2-5, 2011.

Modeling EOR oil production without an oil phase in the context of CCS: step-by-step conversion from a 3-phase system to a 2-Phase CO2-brine system: poster presented at Conference on Carbon Capture and Sequestration, CCS Impact on Water Resources, Pittsburgh, Pennsylvania, May 2-5, 2011.

Cranfield phase III modeling: presented at the 6th Annual Southeast Regional Carbon Sequestration Partnership Stakeholders Briefing, Atlanta, Georgia, March 2011.

Cranfield phase III modeling: presented at the 6th Annual Southeast Regional Carbon Sequestration Partnership Stakeholders Briefing, Atlanta, Georgia, March 2011.

Gas cap impact on CO2 plume migration for long-term storage in saline aquifers: presented at the 60th Gulf Coast Association of Geological Societies Annual Meeting, San Antonio, Texas, October 2010.

Gas cap impact on CO2 plume migration for long-term storage in saline aquifers: presented at the 60th Gulf Coast Association of Geological Societies Annual Meeting, San Antonio, Texas, October 2010.

Activities of a Professional Nature

Professional Societies

American Geophysical Union

International Society for Environmental Information Sciences

International Society for Porous Media

Phi Kappa Phi

Society of Petroleum Engineers

Young Professional in Energy

Funding

Research Support

Principal Investigator: Machine Learning Applications to Support Class VI Permitting, U.S. Department of Energy, National Energy Technology Laboratory (March 1, 2024-June 31, 2025;

$407,000).

Co-Principal Investigator: SECARB USA regional CO2 storage project (October 1, 2019-September 30, 2024; $949,958).

Principal Investigator: Science-Informed Machine Learning to Accelerate Real-time (SMART) Decisions in Subsurface Applications Phase 2 - Development and Field Validation, U.S. Department of Energy (March 1, 2023-June 31, 2024; $451,000).

Co-Principal Investigator: Demonstration of proof of concept of a multi-physics approach for near-real-time remote monitoring of dynamic changes in pressure and salinity in hydraulically fractured networks, Department of Energy (October 1, 2019-September 31, 2021; $1,470,566).

Principal Investigator: Developing Machine Learning Workflows for Rapid Forecasting in Subsurface Science, U.S. Department of Energy (January 7, 2020-August 31, 2021; $350,000).

Principal Investigator: State of Induced Seismicity in CCS Projects, IEAGHG: IEA Greenhouse Gas R&D Programme (April 1-October 31, 2020; $89,000).

Co-Principal Investigator: USGS-GCCC co-op research project, USGS (April 27, 2017-April 27, 2019; $150,000).

Co-Principal Investigator: Headspace Gas Monitoring to Infer Dissolved Gas Concentrations, Australian National Low Emission Coal Research and Development (February 20, 2018-February 19, 2019; $314,937).

Co-Principal Investigator: Pressure-Based Inversion and Data Assimilation System (PIDAS) for CO2 Leakage Detection, Department of Energy (January 2014-December 2017; $971,914).

Co-Principal Investigator: USGS-GCCC co-op research project, USGS (April 27, 2016-April 28, 2017; $50,000).

Principal Investigator: Enhanced Analytical Simulation Tool for CO2 Storage Capacity Estimation and Uncertainty Quantification, Department of Energy (April 2013-April 2017; $999,340).

Co-Principal Investigator: Demonstration of de-facto CO2 storage at a CO2-EOR site, SECARB Early Test site, MS, JIP CCP4 (November 1, 2015-October 31, 2016; $120,374).

Principal Investigator: Pressure management and plume control strategies through a brine extraction storage test at the Devine Test Site in Texas, Department of Energy (September 1, 2015-August 31, 2016; $1,865,038).

Publications

Peer Reviewed Authored Books

Hosseini, S. A., Hovorka, S. D., Savvaidis, A., Kavoura, F., and Nicot, J.-P., 2022, Current state of knowledge regarding the risk of induced seismicity at CO2 storage projects: Cheltenham, UK, IEA Environmental Projects Ltd., IEAGHG Technical Report, v. 2022-02, 63 p.

Peer Reviewed Journal Articles

Guo, R., Ershadnia, R., Wang, H., Hosseini, S. A., and Zhao, Q., 2025, Microfluidic experiments on hydrogen behavior in heterogeneous rocks during underground hydrogen storage in saline aquifers: Fuel, v. 391, no. 134731, 12 p., http://doi.org/10.1016/j.fuel.2025.134731.

Guo, R., Wang, H., Leng, J., and Hosseini, S. A., 2025, Evaluation of hydrogen leakage through abandoned wells to overlaying saline aquifers during underground hydrogen storage in depleted natural gas reservoirs: Gas Science and Engineering, v. 140, no. 205659, 11 p., http://doi.org/10.1016/j.jgsce.2025.205659.

Wang, H., and Hosseini, S. A., 2025, Advancing deep learning-based dimension reduction for complex three-dimensional saturation data in large-scale geological carbon storage: Journal of

Hydrology, v. 662, part C, no. 134092, 17 p., http://doi.org/10.1016/j.jhydrol.2025.134092.

Wang, Z. W., Hosseini, S. A., Treviño, R. H., and Hovorka, S. D., 2025, Analyzing the impact of across-fault flow in carbon geological storage: a simulation study: Journal of Hydrology, v. 658, no. 133108, 16 p., http://doi.org/10.1016/j.jhydrol.2025.133108.

Ershadnia, R., Moeini, F., Hosseini, S. A., Dai, Z., and Soltanian, M. R., 2024, Predicting multiphase flow behavior of methane in shallow unconfined aquifers using conditional deep convolutional generative adversarial network: Journal of Hydrology, v. 641, no. 131674, 15 p., http://doi.org/10.1016/j.jhydrol.2024.131674.

Fan, M., Wang, H., Zhang, J., Hosseini, S. A., and Lu, D., 2024, Advancing spatiotemporal forecasts of CO_2 plume migration using deep learning networks with transfer learning and interpretation analysis: International Journal of Greenhouse Gas Control, v. 132, no. 104061, 15 p., http://doi.org/10.1016/j.ijggc.2024.104061.

Hosseini, S. A., Ershadnia, R., Lun, L., Morgan, S., Bennet, M., Skrivanos, C., Li, B., Soltanian, M. R., Pawar, R., and Hovorka, S. D., 2024, Dynamic modeling of geological carbon storage in aquifers-workflows and practices: International Journal of Greenhouse Gas Control, v. 138, no. 104235, 18 p., http://doi.org/10.1016/j.ijggc.2024.104235.

Leng, J., Bump, A., Hosseini, S. A., Meckel, T. A., Wang, Z., and Wang, H., 2024, A comprehensive review of efficient capacity estimation for large-scale CO_2 geological storage: Gas Science and Engineering, v. 126, no. 205339, 19 p., http://doi.org/10.1016/j.jgsce.2024.205339.

Ramadhan, R., Promneewat, K., Thanasaksukthawee, V., Tosuai, T., Babaei, M., Hosseini, S. A., Puttiwongrak, A., Leelasukseree, C., and Tangparitkul, S., 2024, Geomechanics contribution to CO_2 storage containment and trapping mechanisms in tight sandstone complexes: a case study on Mae Moh Basin: Science of The Total Environment, v. 928, no. 172326, 13 p., http://doi.org/10.1016/j.scitotenv.2024.172326.

Treviño, R. H., Hovorka, S. D., Dunlap, D. B., Larson, R. C., Hentz, T. F., Hosseini, S. A., Bhattacharya, S., and DeAngelo, M. V., 2024, A phased workflow to define permit-ready locations for large volume CO_2 injection and storage: Greenhouse Gases Science and Technology, v. 14, no. 1, p. 95-110, http://doi.org/10.1002/ghg.2253.

Wang, H., Guo, R., Dalton, L. E., Crandall, D., Hosseini, S. A., Fan, M., and Chen, C., 2024, Comparative assessment of U-Net-based deep learning models for segmenting microfractures and pore spaces in digital rocks: SPE Journal, v. 29, no. 11, p. 5779-5791, http://doi.org/10.2118/215117-PA.

Wang, H., Hosseini, S. A., Tartakovsky, A. M., Leng, J., and Fan, M., 2024, A deep learning-based workflow for fast prediction of 3D state variables in geological carbon storage: a dimension reduction approach: Journal of Hydrology, v. 636, no. 131219, 18 p., http://doi.org/10.1016/j.jhydrol.2024.131219.

Wang, Z. W., Peng, C., Ayala, L. F., and Hosseini, S. A., 2024, A framework for simulating the partially miscible multi-component hydrocarbon fluids in porous media via the pseudo-potential lattice Boltzmann model: InterPore Journal, v. 1, no. 1, 21 p., http://doi.org/10.69631/ipj.v1i1nr7.

Bump, A. P., Bakhshian, S., Ni, H., Hovorka, S. D., Olariu, M. I., Dunlap, D., Hosseini, S. A., and Meckel, T. A., 2023, Composite confining systems: Rethinking geologic seals for permanent CO_2 sequestration: International Journal of Greenhouse Gas Control, v. 126, no. 103908, 12 p., http://doi.org/10.1016/j.ijggc.2023.103908.

Ershadnia, R., Singh, M., Mahmoodpour, S., Meyal, A., Moeini, F., Hosseini, S. A., Sturmer, D. M., Rasoulzadeh, M., Dai, Z., and Soltanian, M. R., 2023, Impact of geological and operational conditions on underground hydrogen storage: International Journal of Hydrogen Energy, v. 48, no. 4, p. 1450-1471, http://doi.org/10.1016/j.ijhydene.2022.09.208.

Ershadnia, R., Wallace, C. D., Hajirezaie, S., Hosseini, S. A., Nguyen, T. N., Sturmer, D. M., Dai, Z., and Soltanian, M. R., 2022, Hydro-thermo-chemo-mechanical modeling of carbon dioxide injection in fluvial heterogeneous aquifers: Chemical Engineering Journal, v. 431, no. 133451, 23 p., http://doi.org/10.1016/j.cej.2021.133451.

Ershadnia, R., Wallace, C. D., Hajirezaie, S., Hosseini, S. A., Nguyen, T. N., Sturmer, D. M., Dai, Z., and Soltanian, M. R., 2022, Hydro-thermo-chemo-mechanical modeling of carbon dioxide injection in fluvial heterogeneous aquifers: Chemical Engineering Journal, v. 431, no. 4, article no. 133451, 23 p., http://doi.org/10.1016/j.cej.2021.133451.

Ge, J., Nicot, J.-P., Hennings, P. H., Smye, K. M., Hosseini, S. A., Gao, R. S., and Breton, C. L., 2022, Recent water disposal and pore pressure evolution in the Delaware Mountain Group, Delaware Basin, Southeast New Mexico and West Texas, USA: Journal of Hydrology: Regional Studies, v. 40, no. 101041, 17 p., http://doi.org/10.1016/j.ejrh.2022.101041.

Ulfah, M., Hosseini, S., Hovorka, S., Bump, A., Bakhshian, S., and Dunlap, D., 2022, Assessing impacts on pressure stabilization and leasing acreage for CO_2 storage utilizing oil migration concepts: International Journal of Greenhouse Gas Control, v. 115, no. 103612, 13 p., http://doi.org/10.1016/j.ijggc.2022.103612.

Ershadnia, R., Hajirezaie, S., Amooie, A., Wallace, C. D., Gershenzon, N. I., Hosseini, S. A., Sturmer, D. M., Ritzi, R. W., and Soltanian, M. R., 2021, CO_2 geological sequestration in multiscale heterogeneous aquifers: effects of heterogeneity, connectivity, impurity, and hysteresis: Advances in Water Resources, v. 151, no. 103895, 16 p., http://doi.org/10.1016/j.advwatres.2021.103895.

Ershadnia, R., Hajirezaie, S., Amooie, A., Wallace, C. D., Gershenzon, N. I., Hosseini, S. A., Sturmer, D. M., Ritzi, R. W., and Soltanian, M. R., 2021, CO_2 geological sequestration in multiscale heterogeneous aquifers: effects of heterogeneity, connectivity, impurity, and hysteresis: Advances in Water Resources, v. 151, no. 103895, 16 p., http://doi.org/https://doi.org/10.1016/j.advwatres.2021.103895.

Ershadnia, R., Wallace, C. D., Hosseini, S. A., Dai, Z., and Soltanian, M. R., 2021, Capillary heterogeneity linked to methane lateral migration in shallow unconfined aquifers: Geophysical Research Letters, v. 48, no. 23, article no. e2021GL095685, 12 p., http://doi.org/10.1029/2021GL095685.

Feng, D., Bakhshian, S., Wu, K., Song, Z., Ren, B., Li, J., Hosseini, S. A., and Li, X., 2021, Wettability effects on phase behavior and interfacial tension in shale nanopores: Fuel, v. 290, no. 119983, 17 p., http://doi.org/10.1016/j.fuel.2020.119983.

Shokouhi, P., Kumar, V., Prathipati, S., Hosseini, S. A., Giles, C. L., and Kifer, D., 2021, Physics-informed deep learning for prediction of CO_2 storage site response: Journal of Contaminant Hydrology, v. 241, no. 103835, 13 p., http://doi.org/10.1016/j.jconhyd.2021.103835.

Bakhshian, S., Hosseini, S. A., and Lake, L. W., 2020, CO_2-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.

Jung, H., Espinoza, D. N., and Hosseini, S. A., 2020, Wellbore injectivity response to step-rate CO_2 injection: coupled thermo-poro-elastic analysis in a vertically heterogeneous formation: International Journal of Greenhouse Gas Control, v. 102, no. 103156, 10 p., http://doi.org/10.1016/j.ijggc.2020.103156.

Mehana, M., Hosseini, S. A., Meckel, T. A., and Viswanathan, H., 2020, Modeling CO_2 plume migration using an invasion-percolation approach that includes dissolution: Greenhouse Gases: Science and Technology, v. 10, no. 2, p. 283-295, http://doi.org/10.1002/ghg.1976.

Zhou, Q., Yang, X., Zhang, R., Hosseini, S. A., Ajo-Franklin, J. B., Freifeld, B. M., Daley, T. M., and Hovorka, S. D., 2020, Dynamic processes of CO_2 storage in the field: 1. multiscale and multipath channeling of CO_2 flow in the hierarchical fluvial reservoir at Cranfield, Mississippi: Water Resources Research, v. 56, no. e2019EF001360, 30 p., http://doi.org/10.1029/2019WR025688.

Alfi, M., Hosseini, S. A., Enriquez, D., and Zhang, T., 2019, A new technique for permeability calculation of core samples from unconventional gas reservoirs: Fuel, v. 235, p. 301-305, http://doi.org/10.1016/j.fuel.2018.07.114.

Alfi, M., Vasco, D. W., Hosseini, S. A., Meckel, T., and Hovorka, S. D., 2019, Validating compositional fluid flow simulations using 4D seismic interpretation and vice versa in the SECARB Early Test--a critical review: International Journal of Greenhouse Gas Control, v. 82, p. 162-174, http://doi.org/10.1016/j.ijggc.2019.01.003.

Bakhshian, S., and Hosseini, S. A., 2019, Pore-scale analysis of supercritical CO_2-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 CO_2 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 CO_2-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.

Goudarzi, A., Meckel, T., Hosseini, S. A., and Treviño, R. H., 2019, Statistical analysis of historic hydrocarbon production data from Gulf of Mexico oil and gas fields and application to dynamic capacity assessment in CO_2 storage: International Journal of Greenhouse Gas Control, v. 80, p. 96-102, http://doi.org/10.1016/j.ijggc.2018.11.014.

Hosseini, S. A., 2019, Fault leakage detection and characterization using pressure transient analysis: Journal of Petroleum Science and Engineering, v. 176, p. 880-886, http://doi.org/10.1016/j.petrol.2019.01.099.

Nuñez-López, V., Gil-Egui, R., and Hosseini, S. A., 2019, Environmental and operational performance of CO_2-EOR as a CCUS technology: a Cranfield example with dynamic LCA considerations: Energies, v. 12, no. 3, 15 p., http://doi.org/10.3390/en12030448, Article 448.

Soltanian, M. R., Hajirezaei, S., Hosseini, S. A., Dashtian, H., Amooie, M. A., Meyal, A., Ershadnia, R., Ampomah, W., Islam, A., and Zhang, X., 2019, Multicomponent reactive transport of carbon dioxide in fluvial heterogeneous aquifers: Journal of Natural Gas Science and Engineering, v. 65, p. 212-223, http://doi.org/10.1016/j.jngse.2019.03.011.

Vasco, D. W., Alfi, M., Hosseini, S. A., Zhang, R., Daley, T., Ajo-Franklin, J. B., and Hovorka, S. D., 2019, The seismic response to injected carbon dioxide: comparing observations to estimates based upon fluid flow modeling: Journal of Geophysical Research: SolidEarth, v. 124, no. 7, p.

6880-6907, http://doi.org/10.1029/2018JB016429.

Ganjdanesh, R., and Hosseini, S. A., 2018, Development of an analytical simulation tool for storage capacity estimation of saline aquifers: International Journal of Greenhouse Gas Control, v. 74, p. 142-154, http://doi.org/10.1016/j.ijggc.2018.04.017.

Goudarzi, A., Hosseini, S. A., Sava, D., and Nicot, J.-P., 2018, Simulation and 4D seismic studies of pressure management and CO2 plume control by means of brine extraction and monitoring at the Devine Test Site, South Texas, USA: Greenhouse Gases: Science and Technology, v. 8, p. 185-204, http://doi.org/10.1002/ghg.

Hosseini, S. A., Alfi, M., Nicot, J.-P., and Nuñez-López, V., 2018, Analysis of CO2 storage mechanisms at a CO2-EOR site, Cranfield, Mississippi: Greenhouse Gases: Science and Technology, v. 8, p. 469-482, http://doi.org/10.1002/ghg.1754.

Hosseininoosheri, P., Hosseini, S. A., Nuñez-López, V., and Lake, L. W., 2018, Impact of field development strategies on CO2 trapping mechanisms in a CO2-EOR field: a case study in the Permian Basin (SACROC unit): International Journal of Greenhouse Gas Control, v. 72, p. 92-104, http://doi.org/10.1016/j.ijggc.2018.03.002.

Goudarzi, A., Almohsin, A, Varavei, A., Taksaudom, P., Hosseini, S. A., Delshad, M., Bai, B, and Sepehrnoori, K., 2017, New laboratory study and transport model implementation of microgels for conformance and mobility control purposes: Fuel, v. 192, p. 158-168, http://doi.org/10.1016/j.fuel.2016.11.111.

Kim, S., and Hosseini, S. A., 2017, Study on the ratio of pore-pressure/stress changes during fluid injection and its implications for CO2 geologic storage: Journal of Petroleum Science and Engineering, v. 149, p. 138-150, http://doi.org/10.1016/j.petrol.2016.10.037.

Lu, J., Darvari, R., Nicot, J.-P., Mickler, P., and Hosseini, S. A., 2017, Geochemical impact of injection of Eagle Ford brine on Hosston sandstone formation--observations of autoclave water-rock interaction experiments: Applied Geochemistry, v. 84, p. 26-40, http://doi.org/10.1016/j.apgeochem.2017.06.002.

Alfi, M., and Hosseini, S. A., 2016, Integration of reservoir simulation, history matching, and 4D seismic for CO2-EOR and storage at Cranfield, Mississippi, USA: Fuel, v. 175, p. 116-128, http://doi.org/10.1016/j.fuel.2016.02.032.

Ganjdanesh, R., and Hosseini, S. A., 2016, Potential assessment of methane and heat production from geopressured-geothermal aquifers: Geothermal Energy, v. 4, no. 1, 25 p., http://doi.org/10.1186/s40517-016-0058-4.

Hosseini, S. A., and Alfi, M., 2016, Time-lapse application of pressure transient analysis for monitoring compressible fluid leakage: Greenhouse Gases: Science and Technology, v. 6, no. 3, p. 352-369, http://doi.org/10.1002/ghg.

Shakiba, M., and Hosseini, S. A., 2016, Detection and characterization of CO2 leakage by multi-well pulse testing and diffusivity tomography maps: International Journal of Greenhouse Gas Control, v. 54, p. 15-28, http://doi.org/10.1016/j.ijggc.2016.08.015.

Soltanian, M., Amooie, M. A., Cole, D. R., Graham, D. E., Hosseini, S. A., Hovorka, S. D., Pfiffner, S. M., Phelps, T. J., and Moortgat, J., 2016, Simulating the Cranfield geological carbon sequestration project with high-resolution static models and an accurate equation of state: International Journal of Greenhouse Gas Control, v. 54, p. 282-296, http://doi.org/10.1016/j.ijggc.2016.10.002.

Hosseini, S. A., Javadpour, F., and Michael, G. E., 2015, Novel analytical core-sample analysis indicates higher gas content in shale-gas reservoirs: SPE Journal, v. 20, no. 6, p. 1397-1408, http://doi.org/10.2118/174549-PA.

Karegar, M. A., Dixon, T. H., Malservisi, R., Yang, Q., Hosseini, S. A., and Hovorka, S. D., 2015, GPS-based monitoring of surface deformation associated with CO2 injection at an enhanced oil

recovery site: International Journal of Greenhouse Gas Control, v. 41, p. 116-126, http://doi.org/10.1016/j.ijggc.2015.07.006.

Kim, S., and Hosseini, S. A., 2015, Hydro-thermo-mechanical analysis during injection of cold fluid into a geologic formation: International Journal of Rock Mechanics & Mining Sciences, v. 77, p. 220-236, http://doi.org/10.1016/j.ijrmms.2015.04.010.

Mukhopadhyay, S., Doughty, C., Bacon, D., Li, J., Wei, L., Yamamoto, H., Gasda, S., Hosseini, S. A., Nicot, J.-P., and Birkholzer, J. T., 2015, The Sim-SEQ Project: comparison of selected flow models for the S-3 site: Transport in Porous Media, v. 108, p. 207-231, http://doi.org/10.1007/s11242-014-0361-0.

Kim, S., and Hosseini, S. A., 2014, Above-zone pressure monitoring and geomechanical analyses for a field-scale CO2 injection project in Cranfield, MS: Greenhouse Gases: Science and Technology, v. 4, no. 1, p. 81-98, http://doi.org/10.1002/ghg.1388.

Choi, Jong-Won, Nicot, J. -P., Hosseini, S. A., Clift, S. J., and Hovorka, S. D., 2013, CO2 recycling accounting and EOR operation scheduling to assist in storage capacity assessment at a U.S. gulf coast depleted reservoir: International Journal of Greenhouse Gas Control, v. 18, p. 474-484.

Delshad, Mojdeh, Kong, X., Tavakoli, R., Hosseini, S. A., and Wheeler, M. F., 2013, Modeling and simulation of carbon sequestration at Cranfield incorporating new physical models: International Journal of Greenhouse Gas Control, v. 18, p. 463-473.

Hosseini, S. A., Lashgari, H., Choi, Jong-Won, Nicot, J. -P., Lu, Jiemin, and Hovorka, S. D., 2013, Static and dynamic reservoir modeling for geological CO2 sequestration at Cranfield, Mississippi, U.S.A.: International Journal of Greenhouse Gas Control, v. 18, p. 449-462.

Meckel, Timothy, Zeidouni, M., Hovorka, S. D., and Hosseini, S. A., 2013, Assessing sensitivity to well leakage from three years of continuous reservoir pressure monitoring during CO2 injection at Cranfield, MS, USA: International Journal of Greenhouse Gas Control, v. 18, p. 439-448.

Hosseini, S. A., and Nicot, J. -P., 2012, Numerical modeling of a multiphase water-oil-CO2 system using a water-CO2 system: application to the far field of a U.S. Gulf Coast reservoir: International Journal of Greenhouse Gas Control, v. 10, p. 88-99.

Hosseini, S. A., and Nicot, J. -P., 2012, Scoping analysis of brine extraction/re-injection for enhanced CO2 storage: Greenhouse Gas Science and Technology, v. 2, p. 172-184.

Hosseini, S. A., Mathias, S. A., and Javadpour, F., 2012, Analytical model for CO2 injection into brine aquifers containing residual CH4: Transport in Porous Media, v. 94, p. 795-815.

Lu, J., Cook, P. J., Hosseini, S. A., Yang, C., Romanak, K. D., Zhang, T., Freifeld, B. M., Smyth, R. C., Zeng, H., and Hovorka, S. D., 2012, Complex fluid flow revealed by monitoring CO2 injection in a fluvial formation: Journal of Geophysical Research, v. 117, B03208, doi:10.1029/2011JB008939.

Mukhopadhyay, S., Birkholzer, J. T., Nicot, J. -P., and Hosseini, S. A., 2012, A model comparison initiative for a CO2 injection field test: an introduction to Sim-SEQ: Environmental Earth Science, v. 67, p. 601-611.

Zahid, K., Hosseini, S. A., Nuñez-López, V., and Hovorka, S. D., 2012, Characterizing CO2 storage reservoirs and shallow overburden for above-zone monitoring in Texas Gulf Coast EOR fields: Greenhouse Gases Science and Technology, v. 2, p. 460-473.

Mathias, S. A., Gluyas, J. G., Gonzalez Martinez de Miguel, G. J., and Hosseini, S. A., 2011, Role of partial miscibility on pressure buildup due to constant rate injection of CO2 into closed and open brine aquifers: Water Resources Research, v. 47, W12525, doi:10.1029/2011WR011051, 11 p.

Hosseini, S. A., and Kelkar, M., 2010, Analytical upgridding method to preserve dynamic flow behavior: SPE Reservoir Evaluation & Engineering, v. 13, no. 3, p. 473-484. doi: 10.2118/116113-PA.

Hosseini, S. A., Kang, S., and Datta-Gupta, A., 2010, Qualitative well placement and drainage volume calculations based on diffusive time of flight: Journal of Petroleum Science and Engineering, v. 75, p. 178-188.

Soleimani, M., Hosseini, S. A., Roostaazad, R., Petersen, J., Mousavi, S. M., and Kazemi Vasiri, A., 2009, Microbial leaching of a low-grade sphalerite ore using a draft tube fluidized bed bioreactor: Hydrometallurgy, v. 99, nos. 3-4, p. 131-136.

Hosseini, S. A., Yaghmaei, S., and Mousavi, S. M., 2006, Biodesulfurization of dibenzothiophene by a newly isolated thermophilic bacteria strain: Iranian Journal of Chemistry and Chemical Engineering, v. 25, no. 25, p. 65-71.

Mousavi, S. M., Yaghmaei, S., Vossoughi, M., Jafari, A., and Hosseini, S. A., 2005, Comparison of bioleaching ability of two native mesophilic and thermophilic bacteria on copper recovery from chalcopyrite concentrate in an airlift bioreactor: Hydrometallurgy, v. 80, p. 139-144.

Peer Reviewed Book Chapters

Hosseini, S., Larson, R., Shokouhi, P., Kumar, V., Prathipati, S., Kifer, D., Garcez, J., Ayala, L., Reidl, M., Hill, B., and and three others, 2023, Reservoir modeling using fast predictive machine learning algorithms for geological carbon storage, in Mishra, S., ed., Machine learning applications in subsurface energy resource management: Boca Raton, Fla., CRC Press, p. 233-250, http://doi.org/10.1201/9781003207009-17.

Hosseini, S. A., Alfi, M., Nicot, J.-P., and Nuñez-López, V., 2022, Demonstration of de-facto CO2 storage at a CO2-EOR site, Cranfield, MS, in Gerdes, K. F., ed., Carbon dioxide capture for storage in deep geologic formations--results from the CO2 Capture Project: UK, Short Run Press Limited, v. 5, p. 473-526.

Hosseini, S. A., Shakiba, M., Sun, A. Y., and Hovorka, S. D., 2018, In-zone and above-zone pressure monitoring methods for CO2 geologic storage, in Vialle, S., Ajo-Franklin, J., Carey, J. W., eds., Geological carbon storage: subsurface seals and caprock integrity: American Geophysical Union, Geophysical Monograph Series, v. 238, p. 227-241, http://doi.org/10.1002/9781119118657.

Non Peer Reviewed Journal Articles

Wang, Z., and Hosseini, S. A., 2024, Advanced CO2 Storage Capacity Estimation with EASiTool V.5: Conference: CCUS2024, http://doi.org/10.15530/ccus-2024-4001383, https://onepetro.org/ccusce/proceedings/24JCUS/2-24JCUS/D021S005R001/543736.

Leng, J., Wang, H., and Hosseini, S. A., 2023, A data analytics and machine learning study on site screening of CO2 geological storage in depleted oil and gas reservoirs in the Gulf of Mexico: SPE Annual Technical Conference and Exhibition (ATCE), SPE-214866-MS p., http://doi.org/10.2118/214866-MS.

Wang, H., Guo, R., Leng, J., Hosseini, S. A., and Fan, M., 2023, A Comparative Study of Deep Learning Models for Fracture and Pore Space Segmentation in Synthetic Fractured Digital Rocks: SPE Annual Technical Conference and Exhibition, SPE-215117-MS p., http://doi.org/10.2118/215117-MS.

Bump, A., Bakhshian, S., Ni, H., Hovorka, S. D., Dunlap, D. B., Olariu, M. I., Hosseini, S. A., and Meckel, T., 2022, Composite confining systems: rethinking geologic seals for permanent CO2 sequestration: 16th Greenhouse Gas Control Technologies Conference, 23-27 October, Lyon, France, http://doi.org/10.2139/ssrn.4286411.

Shuster, M., Bhattacharya, S., Duncan, I. J., Eichhubl, P., Hosseini, S. A., Javadpour, F., Kipper, J. P., Lin, N., Nicot, J.-P., and Ren, B., 2021, Hydrogen infrastructure expansion requires

realistic framework: Oil & Gas Journal.

Gundersen, K., Hosseini, S. A., Oleynik, A., and Alendal, G., 2020, A Variational Auto-Encoder for Reservoir Monitoring: arXiv, 20 p.

Hosseininoosheri, P., Hosseini, S. A., Nuñez-López, V., and Lake, L. W., 2019, A comparative study of CO2-flood displacement efficiency for different CO2 injection strategies: Permian Basin vs. U.S. Gulf Coast: 14th Greenhouse Gas Control Technologies Conference, GHGT-14, Proceedings, 21-26 October, Melbourne, Australia, 10 p.

Nuñez-López, V., Gil-Egui, R., and Hosseini, S. A., 2019, CO2-EOR and GCS co-optimization with carbon lifecycle analysis considerations: 14th Greenhouse Gas Control Technologies Conference, GHGT-14, Proceedings, 21-26 October, Melbourne, Australia, 12 p., http://doi.org/10.2139/ssrn.3366074.

Hosseininoosheri, P., Hosseini, S. A., Nuñez-López, V., and Lake, L. W., 2018, Evolution of CO2 utilization ratio and CO2 storage under different CO2 - EOR operating strategies: a case study on SACROC unit Permian Basin: http://doi.org/10.2118/190038-MS, presented at the SPE Western Regional Meeting held in Garden Grove, California, USA, 22-27 April.

Hosseininoosheri, P., Hosseini, S. A., Nuñez-López, V., and Lake, L. W., 2018, Modeling CO2 partitioning at a carbonate CO2-EOR site: Permian Basin Field SACROC unit: http://doi.org/10.2118/190161-MS, presented at SPE Improved Oil Recovery Conference, 14-18 April, Tulsa, Oklahoma, USA.

Jung, H., Espinosa, D. N., and Hosseini, S. A., 2018, Local stress changes near CO2 injection wells due to thermo-poro-mechanical processes: impact of vertical heterogeneity: 5 p., American Rock Mechanics Association (ARMA 18-889), presented at 52nd US Rock Mechanics/Geomechanics Symposium, Seattle, Wash., 17-20 June.

Bolhassani, B., Hovorka, S. D., Hosseini, S. A., Young, M. H., Anderson, J., and Yang, C., 2017, Model-based assessment of the site-specific cost of monitoring: Energy Procedia, v. 114, p. 5316-5319, http://doi.org/10.1016/j.egypro.2017.03.1652.

Ganjdanesh, R., and Hosseini, S. A., 2017, Geologic carbon storage capacity estimation using Enhanced Analytical Simulation Tool (EASiTool): Energy Procedia, v. 114, p. 4690-4696, http://doi.org/10.1016/j.egypro.2017.03.1601.

Shakiba, M., Hosseini, S. A., and Sepehrnoori, K., 2017, Monitoring and improvement of waterflooding sweep efficiency using pressure pulse testing: SPE Annual Technical Conference and Exhibition, San Antonio, Tex., http://doi.org/10.2118/187280-MS, SPE-187280-MS.

Bedayat, H., Hosseini, S. A., and Moghadam, M. H., 2016, On the stress changes during CO2 geological storage: considering two phase flow regime: 50th U.S. Rock Mechanics/Geomechanics Symposium, ARMA 16-728.

Alfi, Ma., Hosseini, S. A., Alfi, Me., and Shakiba, M., 2015, Effectiveness of 4D seismic data to monitor CO2 plume in Cranfield CO2-EOR project: Carbon Management Technology Conference, 17-19 November, Sugar Land, Texas, CMTC - 439559 - MS.

Hosseini, S. A., 2014, Time lapse compressibility monitoring for detection of CO2 leakage in brine aquifers: Energy Procedia, v. 63, p. 4459-4463, http://doi.org/10.1016/j.egypro.2014.11.481.

Hosseini, S. A., Kim, S., and Zeidouni, M., 2014, Application of multi-well analytical models to maximize geological CO2 storage in brine formations: Energy Procedia, v. 63, p. 3563-3567, http://doi.org/10.1016/j.egypro.2014.11.385.

Kim, S, and Hosseini, S. A., 2014, Geological CO2 storage: incorporation of pore-pressure/stress coupling and thermal effects to determine maximum sustainable pressure limit: Energy Procedia, v. 63, p. 3339-3346, http://doi.org/10.1016/j.egypro.2014.11.362.

Kim, Seunghee, Hosseini, S. A., and Hovorka, S. D., 2013, Numerical Simulation: Field Scale Fluid Injection to a Porous Layer in relevance to CO2 Geological Storage: Proceedings of the 2013 COMSOL Conference, Boston, Massachusetts.

Mukhopadhyay, S., Hou, Z., Gosink, L., Bacon, D., Doughty, C. A., Li, J., Wei, L., Gasda, S., Bacci, G., Govindan, R., Shi, J.-Q., Yamamoto, H., Ramanathan, R., Nicot, J. -P., Hosseini, S. A., Birkholzer, J. T., and Bonneville, A., 2013, Comparison and uncertainty quantification for geologic carbon storage: The Sim-SEQ Initiative: Energy Procedia, v. 37, Proceedings of 11th International Conference on Greenhouse Gas Control Technologies GHGT11, November 18-22, Kyoto, Japan, p. 3867-3874.

Verma, S., Oakes, C. S., Chugunov, N., Ramakrishnan, T. S., Hosseini, S. A., and Hovorka, S. D., 2013, Reservoir fluid monitoring in carbon dioxide sequestration at Cranfield: Energy Procedia, v. 37, p. 4344-4355.

Mukhopadhyay, S., Doughty, C. A., Bacon, D., Govindan, R., Shi, J.-Q., Gasda, S., Ramanathan, R., Nicot, J. -P., Hosseini, S. A., and Birkholzer, J. T., 2012, Preliminary model-comparison results from the Sim-SEQ Project using TOUGH2, STOMP, ECLIPSE, and VESA approach, in Proceedings, TOUGH Symposium, Lawrence Berkeley National Laboratory, Berkeley, California, September 17-19, LBNL-5808E, p. 709-716.

Singh, H., Javadpour, F., Hosseini, S. A., and Srinivasan, S., 2012, Enhanced CO2 storage in deep saline aquifers by nanoparticles: numerical simulation results: Society of Petroleum Engineers, Paper No. SPE-156983.

Nicot, J. -P., Hosseini, S. A., and Solano, Silvia, 2011, Are single-phase flow numerical models sufficient to estimate pressure distribution in CO2 sequestration projects?, in Energy Procedia, v. 4, Proceedings of 10th International Conference on Greenhouse Gas Control Technologies GHGT10, September 19-23, Amsterdam, The Netherlands, p. 4427-4431.

Solano, Silvia, Nicot, J. -P., and Hosseini, S. A., 2011, Sensitivity study of CO2 storage in saline aquifers in the presence of a gas cap, in Energy Procedia, v. 4, Proceedings of 10th International Conference on Greenhouse Gas Control Technologies GHGT10, September 19-23, Amsterdam, The Netherlands, p. 4508-4515.

King, M. J., Du, S., and Hosseini, S. A., 2010, Extended local and extended single-phase upscaling, in 12th European Conference on the Mathematics of Oil Recovery, Oxford, UK, September 6-9.

Hosseini, S. A., and Kelkar, M., 2008, Analytical upgridding method to preserve dynamic flow behavior, in International Oil & Gas Conference and Exhibition, September 21-23, Denver, Paper SPE 116113.

Hosseini, S. A., Soleimani, M., Roostaazad, R., and Mousavi, S. M., 2007, Comparative study of biosorption of zinc ions using four different types of microbes, in 12th National Iranian Chemical Engineering Congress.

Soleimani, M., Hosseini, S. A., Roostaazad, R., and Mousavi, S. M., 2007, Zinc bioleaching of sphalerite low-grade mineral ore by mesophilic and thermophilic bacteria in an airlift, in 12th National Iranian Chemical Engineering Congress.

Hosseini, S. A., Yaghmaei, S., Mousavi, S. M., and Jadidi, A. R., 2004, Isolation of a new indigeneous thermophilic strain and investigation of its ability toward biodesulfurization, in 9th National Iranian Chemical Engineering Congress.

Conference Proceedings

Hosseini, S. A., and Wang, H., 2024, ML-based Dimension Reduction Strategies, 2024 FECM / NETL Carbon Management Research Project Review Meeting, Pittsburgh, PA, United States.

Wang, H., and Hosseini, S. A., 2024, Deep Learning-based Parameterization of Complex 3D CO2 Saturation Data in Large-scale Geological Carbon Storage, American Geophysical Union

Annual Meeting, Washington, DC, United States.

Wang, H., and Hosseini, S. A., 2024, Efficient Dimension Reduction of Complex Three-dimensional CO2 Saturation using Deep Learning Models, 2024 FECM / NETL Carbon Management Research Project Review Meeting, Pittsburgh, PA, United States.

Wang, H., and Hosseini, S. A., 2024, Efficient Dimension Reduction of Complex Three-dimensional CO2 Saturation using Deep Learning Models, 2024 FECM / NETL Carbon Management Research Project Review Meeting.

Bakhshian, S., and Hosseini, S. A., 2021, Pore-scale study of capillary and dissolution trapping of CO2 in saline aquifers, The 15th Greenhouse Gas Control Technologies Conference, March 15-18, no. 3816758, Abu Dhabi, United Arab Emirates, 9 p.

Bakhshian, S., and Hosseini, S. A., 2021, Predicting the CO2 footprint in saline aquifers: a numerical-analytical hybrid model (abs.), Proceedings of the 15th Greenhouse Gas Control Technologies Conference, March 15-18, Abu Dhabi, United Arab Emirates, 2 p.

Gundersen, K., Hosseini, S. A., Oleynik, A., and Alendal, G., 2021, Application of Deep Learning for Characterization of CO2 Leakage Based on Above Zone Monitoring Interval (AZMI) Pressure Data, 15th International Conference on Greenhouse Gas Control Technologies, GHGT-15, UAE, 5 p.

Haddad, M., Ahmadian, M., Ge, J., Hosseini, S. A., Nicot, J.-P., and Ambrose, W. A., 2021, Hydrogeological and Geomechanical Evaluation of a Shallow Hydraulic Fracture at the Devine Fracture Pilot Site, Medina County, Texas, 55th U.S. Rock Mechanics/Geomechanics Symposium, online.

Shakiba, M., Hosseini, S. A., and Sepehrnoori, K., 2017, Monitoring and improvement of waterflooding sweep efficiency using pressure pulse testing, SPE Annual Technical Conference and Exhibition, 9-11 October, San Antonio, Tex., 21 p., http://doi.org/10.2118/187280-MS.

Nuñez-López, V., Gil-Egui, R., Gonzalez, A, Hosseini, S. A., and Hovorka, S. D., 2016, Carbon balance of CO2-EOR for NCNO classification, 13th International Conference on Greenhouse Gas Control Technologies, GHGT-1314-18,, Lausanne, Switzerland.

Contract Reports

Treviño, R. H., Hovorka, S. D., Bhattacharya, S., Dunlap, D. B., Hentz, T. F., Hosseini, S. A., Larson, R., Mérida Rodríguez, A., Prentice, S., and Rogers, H., 2022, Lower Rio Grande Valley LNG CCS potential: Bureau of Economic Geology Gulf Coast Carbon Center, final report prepared for NEXT Carbon Solutions Corporation, under contract no. UTA20-001187, 65 p.

Treviño, R. H., Hovorka, S. D., Prentice, S., Hosseini, S. A., Hentz, T. F., Bhattacharya, S., and Guirola, M., 2021, Lower Rio Grande Valley LNG CCS Potential: final report prepared for NextDecade Corporation, under contract no. UTA20-001187, 50 p.

Nicot, J.-P., Hosseini, S. A., Dashtian, H., Kamali, A., Romanak, K. D., Darvari, R., and Gil-Egui, R., 2019, Headspace gas monitoring to infer dissolved gas concentrations at the Glenhaven Site (QLD): prepared for Australian National Low Emissions Coal Research & Development (ANLEC R&D), Canberra, Australia, 94 p.

Hosseini, S. A., Alfi, M., Nicot, J.-P., and Nuñez-López, V., 2017, Demonstration of de-facto CO2 storage at a CO2-EOR site, Cranfield, MS: Final report prepared for Carbon Capture Project Phase 4 (CCP4), under contract no. UTA15-000949.

Hosseini, S. A., and Ganjdanesh, R., 2017, Development of an Analytical Simulation Tool for Storage Capacity Estimation of Saline Aquifers: Final report prepared for USGS, under contract no. G16AC00045, 28 p.

Nuñez-López, V., Hosseini, S. A., and Gil-Egui, R., 2017, Interim report to DOE: Performance model for CO2 storage system. As part of the project: Carbon Life Cycle Analysis of CO2-EOR

for Net Carbon Negative Oil (NCNO) Classification: 60 p.

Nuñez-López, V., Hosseini, S. A., and Gil-Egui, R., 2017, Milestone report: Reservoir mass accounting methodology. As part of the project: Carbon Life Cycle Analysis of CO2-EOR for Net Carbon Negative Oil (NCNO) Classification: 18 p.

Hosseini, S. A., Nicot, J.-P., Darvari, R., Costley, R., Lu, J., Sava, D., Goudarzi, A., Mickler, P., Banerji, D., Uhlman, K., Walden, S., Hentz, T. F., Hamlin, H. S., Ganjdanesh, R., Sun, A. Y., Hovorka, S. D., and Scanlon, B. R., 2016, Pressure management and plume control strategies through a brine extraction storage test at the Devine Test Site in Texas, Phase I: Bureau of Economic Geology, The University of Texas at Austin, Topical Report prepared for DOE NETL, under contract no. DE-FE0026137, 157 p.

Alfi, M., Hosseini, S. A., and Hovorka, S. D., 2015, Final history match: subsurface plume development: Milestone report prepared for Southeast Regional Carbon Sequestration Partnership led by Southern States Energy Board, under contract no. DE-FC26-05NT42590, 28 p.

Hosseini, S. A., Kim, S., Ganjdanesh, R., and Bedayat, H., 2015, Final developments and release of EASiTool Version 2.0: Milestone report prepared for U.S. Department of Energy, under contract no. DE-FE0009301, 20 p.

Hosseini, S. A., and Kim, S., 2014, Final developments and release of EASiTool Version 1.0: Milestone report prepared for U.S. Department of Energy, under contract no. DE-FE0009301, 22 p.

Davis, D., Nuñez, Vanessa, Hovorka, S. D., Wolaver, B. D., Hosseini, S. A., Porse, S., Romanak, Katherine, 2013, Final Report for the MVA Construction Phase
Phase 2B at West Hastings Field, Gulf Coast Carbon Center at the Bureau of Economic Geology, a unit of The University of Texas at Austin, final report, prepared for Air Products and Chemicals, Inc., DOE award number DE-FE-0002381.

Davis, D., Nuñez-López, V., Hovorka, S. D., Wolaver, B. D., Hosseini, S. A., Porse, S. L., and Romanak, K. D., 2013, Monitoring verification and accounting for demonstration of CO2 capture & sequestration for steam methane reforming gas for large-scale production: The University of Texas at Austin, Bureau of Economic Geology, Phase 2B final report prepared for Department of Energy, under DOE Award Number DE-FE-0002381, 30 p.

Smyth, R. C., Nuñez López, Vanessa, Hovorka, S. D., Wolaver, B. D., Hosseini, S. A., Ambrose, W. A., Lu, Jiemin, Mickler, P., Zahid, K., Zeidouni, M., and Sun, A. Y., 2013, Draft final monitoring plan report, Phase I at West Ranch Field: The University of Texas at Austin, Bureau of Economic Geology, final report prepared for NRG Energy Company, Petra Nova LLC, DOE Award Number: DE-FE-0003311.

Smyth, R. C., Nuñez, Vanessa, Hovorka, S. D., Wolaver, B. D., Hosseini, S. A., Ambrose, W. A., Lu, Jiemin, Mickler, P., Zahid, K., Zeidouni, M., Sun, A. Y., 2013, Monitoring Plan Report: Phase I at West Ranch Field, Gulf Coast Carbon Center at the Bureau of Economic Geology, a unit of The University of Texas at Austin, draft final report, prepared for NRG Energy Inc., Petra Nova LLC, DOE award number DE-FE-0003311.

Clift, S. J., Hosseini, S. A., Hovorka, S. D., and Meckel, T., 2011, CO2 injection and recycle: The University of Texas at Austin, Bureau of Economic Geology, contract report prepared for U.S. Department of Energy, under DOE Award Number DE-FC26-05NT42590 (Southeast Regional Carbon Sequestration Partnership), Phase III 7.1.b, 18p.

Hosseini, S. A., Lashgari, H., Nicot, J. -P., Choi, Jong-Won, and Hovorka, S. D., 2011, Model for deep subsurface history match: The University of Texas at Austin, Bureau of Economic Geology, contract report prepared for U.S. Department of Energy, under DOE Award Number: DE-FC26-05NT42590 (Southeast Regional Carbon Sequestration Partnership), Phase III 9.1.4.b, 55 p.

Nuñez López, Vanessa, Hovorka, S. D., Wolaver, B. D., Zahid, K., Sun, A. Y., Hosseini, S. A., and Romanak, K. D., 2011, Phase 2A at West Hastings field: The University of Texas at Austin, Bureau of Economic Geology, Gulf Coast Carbon Center, final report for the MVA Design Phase prepared for Denbury Onshore, LLC, 126 p.

Nuñez-López, V., Hovorka, S. D., Wolaver, B. D., Zahid, K. M., Sun, A. Y., Hosseini, S. A., and Romanak, K. D., 2011, Monitoring verification and accounting for demonstration of CO_2 capture & sequestration for steam methane reforming gas for large-scale production: The University of Texas at Austin, Bureau of Economic Geology, final report prepared for U.S. Department of Energy, under DOE Award Number: DE-FE-0002381.

Nuñez-López, V., Hovorka, S. D., Wolaver, B. D., Zahid, K., Sun, A. Y., Hosseini, S. A., and Romanak, K. D., 2011, Monitoring verification and accounting subcontracted work for the "Lake Charles CCS Project": The University of Texas at Austin, Bureau of Economic Geology, Gulf Coast Carbon Center, final report, prepared for Denbury Onshore, LLC, under DOE Award Number: DE-FE-0002314, 126 p.

Computer Applications and Internet

Hosseini, S. A., 2017, EASiTool: Version 4.0: Gulf Coast Carbon Center (Computer Program).

Hosseini, S. A., 2014, EASiTool: Version 1.0, Gulf Coast Carbon Center [Computer Program]

Hosseini, S. A., Bahar, A., Ates, H., and Kelkar, M., 2010, CONNECT-UpGrid plug-in for Petrel: Schlumberger Ocean Store, https://www.ocean.slb.com/en/plug-ins/plugindetails?ProductId=PCUG-B1.

Published Abstracts

Guo, R., Wang, H., Leng, J., and Hosseini, S. A., 2025, Leakage assessment of hydrogen through abandoned wells in depleted gas reservoir for underground hydrogen storage (abs.): AGU Fall Meeting 2024, no. H43N-1066.

Guo, R., Ershadnia, R., and Hosseini, S. A., 2024, Pore-scale investigation on cyclic injection-withdrawal process in porous media in hydrogen-brine-rock systems (abs.): AGU Fall Meeting 2024, no. MR13A-3176, https://agu.confex.com/agu/agu24/meetingapp.cgi/Paper/1648079.

Bhattacharya, S., Hosseini, S. A., and Rine, M. J., 2021, Integrating 3D seismic and petrophysics to characterize hydrogen storage capacity in the Pinnacle Reef reservoirs in the Michigan Basin (abs.): GeoGulf (Gulf Coast Association of Geological Societies) Annual Convention, Austin, Tex.

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.

Ge, J., Hosseini, S. A., Smye, K. G., Banerji, D., Nicot, J.-P., and Hennings, P., 2019, Hydrogeological modeling and pore pressure characterization of Delaware Mountain Group in the Delaware Basin, Texas and New Mexico (abs.): Abstract H51L-1640, presented at AGU 2019 Fall Meeting, San Francisco, Calif., December 9-13.

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.

Hosseininoosheri, P., Hosseini, S. A., Nuñez-López, V., and Lake, L. W., 2018, A comparative study of CO2-flood displacement efficiency for different CO2 injection strategies: Permian Basin vs. U.S. Gulf Coast (abs.): 14th International Conference on Greenhouse Gas Control Technologies, Melbourne, Australia.

Nuñez-López, V., Gil-Egui, R., and Hosseini, S. A., 2018, EOR and GCS co-optimization with carbon life-cycle analysis considerations (abs.): 14th International Conference on Greenhouse Gas Control Technologies, Melbourne, Australia.

Ganjdanesh, R., and Hosseini, S. A., 2015, Impact of Brine Extraction and Well Placement Optimization on Geologic Carbon Storage Capacity Estimation (abs.): American Geophysical Union Fall Meeting.

Kim, S., and Hosseini, S. A., 2015, Constant Rate or Stepwise Injection of Cold Fluid into a Geologic Formation: A Hydro-Thermo-Mechanical Analysis (abs.): American Geophysical Union Fall Meeting.

Nuñez-López, V., Gil-Egui, R., and Hosseini, S. A., 2015, Validating CO2-EOR as a CCUS technology (abs.): Carbon Management Technology Conference: Sustainable and Economical CCUS Options, Sugar Land, TX.

Shakiba, M., and Hosseini, S. A., 2015, Application of Pressure Pulse Test Analysis in CO2 Leakage Detection and Monitoring (abs.): American Geophysical Union Fall Meeting.

Hosseini, S. A., 2014, Optimization of injection rates for geological CO2 storage in brine formations using EASiTool (ext. abs.): 13th Annual Carbon Capture, Utilization, and Sequestration Conference, Pittsburgh, PA.

Hosseini, S. A., and Zeidouni, M., 2013, Detection of CO2 leakage in overlaying aquifers using time lapse compressibility monitoring: 12th Annual Carbon Capture, Utilization, and Sequestration Conference, Pittsburgh, Pennsylvania.

Hosseini, S. A., Javadpour, Farzam, and Michael, G. E., 2013, An analytical model to estimate gas desorption and flow in ultra-tight shale gas core samples: 5th International Conference on Porous Media & Annual Meeting, Prague, Czech Republic.

Hosseini, S. A., and Zeidouni, M., 2012, Time-lapse compressibility monitoring of CO2 leakage in above zone monitoring interval (abs.), in American Geophysical Union Fall Meeting, San Francisco, December 3-7, Abstract H41C-1194.

Zeidouni, M., Hosseini, S. A., and Nicot, J. -P., 2012, Above-zone temperature variations due to CO2 leakage from the storage aquifer (abs.), in American Geophysical Union Fall Meeting, San Francisco, December 3-7, Abstract H41C-1193.

Hosseini, S. A., and Nicot, J. -P., 2011, Brine reinjection into shallower aquifers during CO2 sequestration: a pressure management practice (abs.), in NGWA Ground Water Summit & 2011 GWPC Spring Meeting, Baltimore, Maryland, May 1-5, Abstract #242.

Hosseini, S. A., and Nicot, J. -P., 2011, Carbon sequestration in saline aquifers connected to EOR fields: modeling implications (abs.), in AGU Meeting, San Francisco, December 5-9, Abstract #1204450.

Lu, J., Cook, P., and Hosseini, S. A., 2011, Fluid flow in a fluvial formation revealed by continual monitoring of fluid chemistry during injection of carbon dioxide (abs.), in GSA Annual Meeting, Minneapolis, October 9-12.

Lu, Jiemin, Cook, P., and Hosseini, S. A., 2011, Fluid flow in a fluvial formation revealed by continual minoring of fluid chemistry during injection of carbon dioxide (abs.), in AGU Meeting, San Francisco, December 5-9.

Lu, Jiemin, Cook, P., and Hosseini, S. A., 2011, Fluid flow in a fluvial formation revealed by continual minoring of fluid chemistry during injection of carbon dioxide (abs.), in GSA Annual

Meeting, Minneapolis, October 9-12, Abstract #194590.