

Shihao Wang

EN4020, University of Wyoming.
Laramie, WY. 82072 USA

gohych@gmail.com
720-427-7779

Education

Colorado School of Mines , Golden, CO.	2015-2019
Ph.D. in Petroleum Engineering, Minor in Applied Mathematics.	GPA: 4.0/4.0
Colorado School of Mines , Golden, CO.	2012-2015
Master in Petroleum Engineering.	GPA: 3.96/4.0
Peking University , Beijing, China.	2008-2012
Bachelor in Mechanical Engineering.	GPA: 3.76/4.0

Working Experience

Assistant Professor, University of Wyoming, Laramie, WY. Aug. 2026-present
Energy & Petroleum Engineering Department **Lead Research Scientist**, **Chevron Corp**, Houston, TX. Nov. 2022-Aug. 2026
Reservoir Simulation & Optimization Research Chapter

Research Scientist, **Chevron Corp**, Houston, TX. Aug 2019-Oct.2022
Reservoir Simulation & Optimization Research Chapter

Post-doc, **Colorado School of Mines**, Golden, CO. Feb. 2019-Jul. 2019
Department of Petroleum Engineering

Graduate Research Assistant, **Colorado School of Mines**, Golden, CO. Aug. 2012-Dec. 2018
Department of Petroleum Engineering

Intern, **Schlumberger Doll-Research Center**, Cambridge, MA. Jun. 2017-Spe. 2017
Department of Math & Modeling

Visiting Scientist, **National Renewable Energy Laboratory**, Golden, CO. May. 2016-Aug. 2016
Department of Geoscience

Intern, **Schlumberger Doll-Research Center**, Cambridge, MA. Jun. 2015-Sep. 2015
Department of Earth Science

Publications (50+ papers with 1700+ citations)

Journal Publications

S Wang, et al. (2026). Hydraulic-mechanical analysis of induced stress change in unconventional reservoirs using a novel fundamental solution of poromechanics in a half space. *Petroleum Science*.

S Wang, et al. (2026). Efficient hydro-mechanical coupling method for modeling fracture propagation in poroelastic rocks using displacement discontinuity method and embedded discrete fracture model. *Journal of Rock Mechanics and Geotechnical Engineering*.

S Wang, et al. (2026). Mineralogy impact on pore accessibility of shale nanopores and its implications on gas injection enhanced oil recovery: A molecular perspective. *Physics of Fluids*, 38(7).

S Wang, S Li, & YS Wu. (2024). An analytical solution of pressure and displacement induced by recovery of poroelastic reservoirs and its applications. *SPE Journal*, 28(03), 1329-1348. X Yu, X Yan, C Wang, **S Wang (Corresponding author)**, & YS Wu.

(2024). Thermal-hydraulic-mechanical analysis of enhanced geothermal reservoirs with hybrid fracture patterns using a combined XFEM and EDFM-MINC model. *Geoenergy Science and Engineering*, 211984. **S Wang**, Yu, X., P. H Winterfeld, , & YS

Wu. (2024). Real-time simulation of hydraulic fracturing using a combined integrated finite difference and discontinuous displacement method: numerical algorithm and field applications. *Water*, 15(5), 938. F Chen, **S Wang (Corresponding author)**, H

Nasrabadi, (2024). Molecular insights of excessive water cut during cyclic gas injection in liquid-rich shale reservoirs: contributions of hydrocarbon condensation and water trapping. *SPE Journal*, 1-15 H Zhang, **S Wang**, X Wang, R Qiao. (2024). Enhanced

recovery of oil mixtures from calcite nanopores facilitated by CO₂ injection. *Energy & Fuels*, 38 (6), 5172-5182 F Chen, **S Wang**, M Dejam, H Nasrabadi, (2024). Molecular

simulation of competitive adsorption of hydrogen and methane: analysis of hydrogen storage feasibility in depleted shale gas reservoirs. *SPE Journal*, 29 (06), 3412–3422. **S**

Wang, H Zhang, B Jin, R Qiao, & X. H. Wen. (2023). Molecular insights of condensate trapping mechanism in shale oil reservoirs and its implications on lean gas enhanced oil recovery. *Chemical Engineering Journal*, 476, 146366.

S Wang, F Chen, YS W, & H Nasrabadi. (2023). The potential of hydrogen storage in depleted unconventional gas reservoirs: A multiscale modeling study. *International Journal of Hydrogen Energy*, 48(42), 16007-16019.

S Wang, Y Zhang, & YS Wu, & X. H. Wen (2022). A semianalytical formulation for estimating induced surface subsidence of a poroelastic reservoir. *SPE Journal*, 27(05), 3158-3177.

S Wang, Y Zhang, & YS Wu. (2022). Deep learning accelerated hydraulic-mechanical simulation with prior smoothness constraints for heterogeneous petroleum reservoirs. *SPE Journal*, 27(05), 2689-2702.

- H Zhang, D Moh, **S Wang**, X Yin, R Qiao. (2022). Diffusio-osmosis of oil–CO₂ mixture in inorganic nanopores. *Physics of Fluids*, 34(9).
- S Wang**, Y Zhang, H Wu, Lee, S. H., Qiao, R., & X. H. Wen. (2022). A kinetic model for multicomponent gas transport in shale gas reservoirs and its applications. *Physics of Fluids*, 34(8).
- F Chen, S Luo, **S Wang**, H Nasrabadi, (2022) A generalized machine learning-assisted phase-equilibrium calculation model for shale reservoirs. *Fluid Phase Equilibria* 558 (2022): 113423.
- Li, S., **S Wang (Corresponding author)**, H. Tang (2022). Stimulation mechanism and design of enhanced geothermal systems: A comprehensive review. *Renewable and Sustainable Energy Reviews* 155: 111914.
- S Wang**, YS Wu (2021). Theoretical analysis and semi-analytical formulation for capturing the coupled thermal-hydraulic-mechanical process using the stress formulation. *Journal of Petroleum Science and Engineering*, 109752.
- Zhang, H., D Moh, **S Wang**, X Yin, R Qiao. (2021). Soaking in CO₂ huff-n-puff: A single-nanopore scale study. *Fuel*, 308, 122026.
- S Wang**, Y Di, YS Wu, P Winterfeld (2021). Understanding the multiphysical processes in CO₂-EOR operations: a numerical study using a general simulation framework. *SPE Journal*. 12
- N Sobecki, **S Wang**, D Ding, C Nieto-Draghi., YS Wu. (2020). A multi-scale modeling of confined fluid: From nanopore to unconventional reservoir simulation. *Journal of Petroleum Science and Engineering*, 193, 107364.
- S Wang**, N Sobecki, D Ding, L Zhu, YS Wu (2019). Accelerating and stabilizing the vapor-liquid equilibrium (VLE) calculation in compositional simulation of unconventional reservoirs using deep learning based flash calculation. *Fuel*, 253, 209-219.
- H Tang, **S Wang (Corresponding author)**, C Yin, Y Di, YS Wu, Y Wang (2019). Fully-coupled multi-physical simulation with physics-based nonlinearity-elimination preconditioned inexact newton method for enhanced oil recovery. *Communications in Computational Physics*, 1(25), 244-265.
- Y Wang, B Ju, **S Wang (Corresponding author)**, Z Yang, Q Liu. (2019). A tight sandstone multi-physical hydraulic fractures simulator study and its field application. *Petroleum*, 4(21), 44-56.
- H Tang, **S Wang**, R Zhang, S Li, L Zhang, YS Wu. (2019). Analysis of stress interference among multiple hydraulic fractures using a fully three-dimensional displacement discontinuity method. *Journal of Petroleum Science and Engineering*, 179, 378-393.
- S Wang**, AA Lukyanov, YS Wu (2019). Second-order gas slippage model for the Klinkenberg effect of multicomponent gas at finite Knudsen numbers up to 1. *Fuel*, 235, 1275-1286.

S Wang, AA Lukyanov, L Wang, YS Wu, A Pomerantz (2017). A non-empirical gas slippage model for low to moderate Knudsen numbers. *Physics of Fluids*, 29(1), 012004.

S Wang, AE Pomerantz, W Xu, A Lukyanov (2017). The impact of kerogen properties on shale gas production: A reservoir simulation sensitivity analysis. *Journal of Natural Gas Science and Engineering*, 48, 13-23.

L Wang, **S Wang**, R Zhang, C Wang, Y Xiong, X Zheng (2017). Review of multi-scale and multi-physical simulation technologies for shale and tight gas reservoirs. *Journal of Natural Gas Science and Engineering*, (37) 560-578.

L Wang, Y Tian, X Yu, C Wang, B Yao, **S Wang**, et al. (2017). Advances in improved/enhanced oil recovery technologies for tight and shale reservoirs. *Fuel*, (210) 425-445.

S Wang, Z Huang, YS Wu, PH Winterfeld, LE Zerpa (2016). A semi-analytical correlation of thermal-hydraulic-mechanical behavior of fractures and its application to modeling reservoir scale cold water injection problems in enhanced geothermal reservoirs. *Geothermics*, (64) 81-95.

Conference Proceedings S Wang et al. (2024). A semi-analytical poroelastic solution of induced pressure-stress changes and its applications to depletion delineation of transversely isotropic shale reservoirs In *SPE/AAPG/SEG Unconventional Resources Technology Conference*. Houston, TX HE Barrios-Molano, **S Wang**., & A Rey. (2023). Analytical and machine learning based modifications to unconventional reservoir simulation models to capture near-fracture transient effects In *SPE/AAPG/SEG Unconventional Resources Technology Conference*. Houston, TX F Chen, S Luo, **S Wang**., & H Nasrabadi. (2023). A novel machine-learning assisted phase-equilibrium calculation model for liquid-rich shale reservoirs. In *SPE Reservoir Simulation Conference*. Houston, TX

F Chen, **S Wang**, & H Nasrabadi,. (2023). Molecular simulation of competitive adsorption of hydrogen and methane: analysis of hydrogen storage feasibility in depleted shale gas reservoirs. In *SPE Reservoir Simulation Conference*. Houston, TX

X Yu, X Yan, C Wang, **S Wang**, & YS Wu. (2023). A sequentially coupled THM model for fractured enhanced geothermal systems using XFEM and hybrid EDFM and MINC models. In *SPE Reservoir Simulation Conference*. Houston, TX

C Zhang, **S Wang**, & YS Wu. (2023). A physics-informed neural network for temporospatial prediction of hydraulic-geomechanical processes. In *SPE Reservoir Simulation Conference*. Houston, TX

S Wang, Y Zhang, O Khebzegga, B Wang, Z Liu, & XH Wen. (2022). A semi-analytical solution of the induced stress change in a layered reservoir based on the stress formulation. In *SPE/AAPG/SEG Unconventional Resources Technology Conference (URTEC)*. Houston, TX

- X Yu, C Wang, X Yan, **S Wang**, L Wang, PH Winterfeld, YS Wu. (2021). A 3D coupled thermal-hydraulic-mechanical thm model using edfm and xfem for hydraulic-fracture-dominated geothermal reservoirs. In ***SPE Reservoir Simulation Conference***. Houston, TX
- S Wang**, YS Wu, X Wen. (2021). Theoretical analysis and semi-analytical formulation for efficient thermal-hydraulic-mechanical reservoir simulation. In ***SPE Reservoir Simulation Conference***. Houston, TX
- S Wang**, L Liang, Y Zhang, XH Wen, YS Wu. (2020). Deep learning based hydraulic-mechanical simulation of petroleum reservoirs. In ***SPE Annual Technical Conference and Exhibition***. Society of Petroleum Engineers. Denver, CO.
- X Yu, C Wang, **S Wang**, PH Winterfeld, YS Wu. (2020). Geomechanics coupled reservoir simulation using a hybrid edfm and minc model for unconventional reservoirs. In ***Unconventional Resources Technology Conference (URTEC)***. Houston, TX
- S Wang**, Y Di, YS Wu, PH Winterfeld (2019). A General Framework Model for Fully Coupled Thermal-Hydraulic-Mechanical Simulation of CO₂ EOR Operations. In ***SPE Reservoir Simulation Conference***. Society of Petroleum Engineers. Houston, TX
- S Wang**, A Lukyanov, YS Wu (2019). Application of Algebraic Smoothing Aggregation Two Level Preconditioner to Multiphysical Fluid Flow Simulations in Porous Media. In ***SPE Reservoir Simulation Conference***. Society of Petroleum Engineers. Houston, TX
- S Wang**, N Sobecki, D Ding, YS Wu, L Zhu (2019). Accelerated Compositional Simulation of Tight Oil and Shale Gas Reservoirs Using Proxy Flash Calculation. In ***SPE Reservoir Simulation Conference***. Society of Petroleum Engineers. Houston, TX
- N Sobecki, **S Wang**, D Ding, C Nieto-Draghi., YS Wu. (2019). Tight Oil and Shale Gas PVT Modelling for Flow Simulation with Matrix-Fracture Interaction. In ***SPE Reservoir Simulation Conference***. Society of Petroleum Engineers. Houston, TX
- X Yu, PH Winterfeld, **S Wang**, YS Wu. (2019). A Geomechanics-Coupled Embedded Discrete Fracture Model and its Application in Geothermal Reservoir Simulation. In ***SPE Reservoir Simulation Conference***. Society of Petroleum Engineers. Houston, TX
- L Liang, L Venkataramanan, **S Wang**, F Canesin, et al. (2018). Estimating In-Situ Relative Permeability and Capillary Pressure From Multiphysics Wireline Measurements. In ***SPWLA 59th Annual Logging Symposium***. Society of Petrophysicists and Well-Log Analysts. Boston, MA
- S Wang**, J Zhang, Z Yang, C Yin, Y Wang, R Zhang (2017). Fully Coupled Thermal-Hydraulic-Mechanical Reservoir Simulation with Non-Isothermal Multiphase Compositional Modeling. In ***SPE Reservoir Simulation Conference***. Society of Petroleum Engineers. Houston, TX

S Wang, et al. (2017). On the Klinkenberg effect of multicomponent gases. In ***SPE Annual Technical Conference and Exhibition***. Society of Petroleum Engineers. Houston, TX

S Wang, PH Winterfeld, YS Wu(2015). Numerical study of thermal-hydraulic-mechanical behavior of fractured geothermal reservoirs. In Proceedings of the ***40th Workshop on Geothermal Reservoir Engineering***, Stanford University, Stanford, CA.

S Wang, PH Winterfeld, YS Wu (2015). An efficient adaptive nonlinearity elimination preconditioned inexact newton method for parallel simulation of thermal-hydraulic-mechanical processes in fractured reservoirs. In ***SPE Reservoir Simulation Conference***. Society of Petroleum Engineers . Houston, TX

S Wang, Y Xiong, P Winterfeld, K Zhang, YS Wu (2014). Parallel simulation of thermal-hydrological-mechanic (THM) processes in geothermal reservoirs. In Proceedings of the ***39th Workshop On Geothermal Reservoir Engineering***, Stanford University, Stanford, CA.

Awards

Chevron Subsurface Excellence Service, Chevron Corp. 2022, 2024

Outstanding Reviewer, SPE Journal, 2021, 2024

Outstanding Reviewer, Rock Mechancis and Rock Engineering, 2016

Outstanding Graduates of Peking University, Beijing City Government, 2012

Temasek Foundation Scholarship, Singapore Government, 2011

National Scholarship of China (Highest Honor), Chinese Government, 2010