Olufemi Olorode

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Google Scholar Profile | Research Website

RESEARCH INTERESTS

- Large-scale molecular simulations of hydrate-based energy storage.
- Numerical and experimental studies of CO_2 storage and hydrogen production.
- Compositional modeling and physics-constrained deep learning.
- Multiscale modeling of coupled physical processes in fractured tight rocks.
- Numerical and experimental studies of geomechanics and fracture propagation.

EDUCATION

- PhD Petroleum engineering, Texas A&M University (GPA:4/4) **August 2017**
- MS Petroleum engineering, Texas A&M University (GPA:3.9/4) **August 2011**
- BS Petroleum engineering, University of Ibadan **June 2008**

EXPERIENCE

- Assistant Professor Louisiana State University (Baton Rouge, LA) **2018 - Date**
- Postdoctoral Researcher Texas A&M University (College Station, TX) **2017 - 2018**
- Graduate Assistant Texas A&M University (College Station, TX) **2015 - 2017**
- Petroleum Engineer Afren Resources (Houston, TX) **2011 – 2015**

EXTERNAL RESEARCH FUNDING (Total Amount: $3.6 M; Fraction to Dr. Olorode: $1.4 M)

#	Project Title	Sponsor	Project Duration	PI	Co-PIs	Total Grant Amount	Fraction to Dr. Olorode
1	TUL-SCC-558627-20/21/Safe, sustainable and resilient development of offshore reservoirs and natural gas upgrading through innovative technology and science	BIRD	09/2020 –08/2025	Thompson, K. E.	**Olorode, O. M.**, Sharma, J., Gupta, I., Almeida, M. A., Ding, K., Spivey, J. J., Dooley, K. M.	$916,900	$91,690

2	Carbon dioxide removal through biomass slurry fracture injection	LSU LIFT[2]	03/2022-02/2024	Snyder, B.	**Olorode O. M.**, Johnson C.	$44,910	$14,820
3	Coarse-Grained Molecular Studies of CO2 Storage in Gas Hydrates	DOE	09/2023-08/2026	**Olorode, O. M**	-	$525,000	$525,000
4	Effects of fluid pressurization rate and injection section length on hydraulic fracturing breakdown pressure: experimental study and theoretical analysis	ACS	09/2023-08/2026	Chen, S.	**Olorode, O. M.**	$110,000	$44,000
5	ULTRA-H2: Reservoir Management of Natural Hydrogen from Ultramafic Rocks	DOE ARPA-E	09/2024-08/2026	**Olorode, O. M.**	Waltrich, P.	$553,820	$276,910
6	Monkey Island Carbon Storage Project	DOE	08/2024 – 07/2026	Zeidouni, M.	Gupta, I., **Olorode, O. M.**	1,473,884	486,382
					Total	**$3,624,514**	**$1,438,802**

COURSES TAUGHT

- PETE 7241 Multiscale Simulation of Unconventional Resources **2018, 2022, 2024**
- PETE 4241 Mechanical Earth Modeling **2019, 2020**
- PETE 2061 Python, Statistics and Data Visualization for Petroleum Engineers **2019-2024**
- PETE 4056 Numerical Simulation of Improved Recovery Processes **2021-2024**
- PETE 7999 Graduate Seminar **2019, 2020**

AWARDS & RECOGNITION

- 2018 SPE Journal Outstanding Technical Editor Award
- AWS Certified Developer Associate

STUDENT RESEARCH SUPERVISION

- **Ph.D. Degree Advisor**

1. Harun Rashid, May 2024
2. Meisam Adibifard, December 2024 (passed final exam)
3. Temitayo Adeyemi, May 2027 (expected)
4. Sid Ahmed Hammoudi, May 2028 (expected)

- **M.Sc. Degree Advisor**

1. Hassan Amer, August 2021
2. Thelma Ihunde, May 2022
3. Ahmed Abdullah, May 2025 (expected)
4. Chibuzor Igweonu, December 2025 (expected)

PROFESSIONAL ACTIVITIES

- Technical Reviewer, NSF, DOE, and ACS Proposals **2020 – Date**
- Technical Editor, Society of Petroleum Engineers (SPE) Journal **2015 - Date**
- Technical Editor, Journal of Petroleum Science & Engineering (JPSE) **2016 – Date**
- Technical Editor, ACS Energy & Fuels **2019 – Date**
- Technical Editor, IEEE Transactions on Geoscience and Remote Sensing (TGRS) **2020 – Date**
- Technical Editor, Energies **2019 – Date**
- Technical Editor, Rock Mechanics and Rock Engineering (RMRE) **2019 – Date**
- Technical Editor, Advances in Geonergy Research (AGER) **2024 – Date**
- Steering Committee Member, Southern US InterPore Chapter **2021 – Date**
- Steering Committee Member, West African InterPore Chapter **2022 – Date**
- Communications Officer, West African InterPore Chapter **2022 – Date**
- Session chair, Southeast Symposium on Contemporary Engineering Topics (SSCET) & UNO Engineering Forum, **2019 & 2022**

JOURNAL PUBLICATIONS (* indicates Dr. Olorode's students and ** indicates Dr. Olorode as the corresponding author)

[1] Onwumelu, C., Kolawole, O., Nordeng, S., and **Olorode, O. M.****, 2024. "Assessing the Effect of Thermal Maturation on Shale Organic Matter via PeakForce Quantitative Nanomechanical Mapping". Rock Mechanics Bulletin (https://doi.org/10.1016/j.rockmb.2024.100128).

[2] Zhou, B., Chen, Z., Song, Z., Tang, Z., Wang, B., and **Olorode, O. M.****, 2024. "A New Numerical Well-Test Model for Naturally Fractured Reservoirs Using an Analytically Modified Embedded Discrete Fracture Model". Journal of Hydrology (https://doi.org/10.1016/j.jhydrol.2024.131330).

[3] Ngoma, M., Kolawole, O., and **Olorode, O. M.**, 2024. "Geothermo-Mechanical Alterations Due to Heat Energy Extraction in Enhanced Geothermal Systems: Overview and Prospective Directions". Deep Underground Science and Engineering Journal (https://doi.org/10.1002/dug2.12109).

[4] Rashid, H* and **Olorode, O. M.****, 2024. “Use of controlled fractures in enhanced geothermal systems”. Advances in Geo-Energy Research Journal, Volume 12, Issue 1 (https://doi.org/10.46690/ager.2024.04.04).

[5] Rashid, H* and **Olorode, O. M.****, 2024. “A Continuous Projection-based EDFM Model for Flow in Fractured Reservoirs”. SPE Journal, Volume 29, Issue 1 (https://doi.org/10.2118/217469-PA).

[6] Adibifard, M.* and **Olorode, O. M.****, 2023. “Large-Scale Nonequilibrium Molecular Studies of Thermal Hydrate Dissociation”. Journal of Physical Chemistry B, Volume 127, Issue 29, 6543–6550 (https://doi.org/10.1021/acs.jpcb.3c03391).

[7] Egbe, U., Awoleke, O., **Olorode, O. M.****, Goddard, S. 2023. “On the Application of Probabilistic Decline Curve Analysis to Unconventional Reservoirs”. SPE Reservoir Evaluation & Engineering 26 (02), 244-260 (https://doi.org/10.2118/212837-PA).

[8] **Olorode, O. M.**** and Rashid, H.*, 2022. “Analytical Modification of EDFM for Transient Flow in Tight Rocks”. Scientific Reports 12 (1), 22018 (https://doi.org/10.1038/s41598-022-26536-w).

[9] Rashid, H.* and **Olorode, O. M.****, 2022. “An iteratively coupled model for flow, deformation, and fracture propagation in fractured unconventional reservoirs.” Journal of Petroleum Science and Engineering, Volume 214, July 2022, 110468 (https://doi.org/10.1016/j.petrol.2022.110468).

[10] Amer, H.* and **Olorode, O. M.****, 2022. “Numerical Evaluation of a Novel Slot-Drill EOR Technology for Tight Rocks”. SPE Journal, Volume 27, Issue 04 2294-2317 (https://doi.org/10.2118/209597-PA).

[11] Ihunde, T.* and **Olorode, O. M.****, 2022. “Application of physics informed neural networks to compositional modeling.” Journal of Petroleum Science and Engineering, Volume 211, April 2022, 110175 (https://doi.org/10.1016/j.petrol.2022.110175).

[12] Yang, B., Wang, H., Shen, Z., **Olorode, O. M.****, Wang, B., Zheng, Y., Yan, W., and Jia, Z., 2021. “Full-Sample X-ray Microcomputed Tomography Analysis of Supercritical CO2 Fracturing in Tight Sandstone: Effect of Stress on Fracture Dynamics”. Energy Fuels Journal, 2021, Volume 35, Issue 02, 1308–1321(https://doi.org/10.1021/acs.energyfuels.0c03554).

[13] **Olorode, O. M.****, Wang, B., Rashid, H. U.*, 2020. “Three-Dimensional Projection-Based Embedded Discrete Fracture Model for Compositional Simulation of Fractured Reservoirs”. SPE Journal, 2020, Volume 25, Issue 04, 2143–2161 (https://doi.org/10.2118/201243-PA).

[14] **Olorode, O. M.****, Akkutlu, Y. I., Efendiev, Y., 2017. “Compositional Reservoir Flow Simulation for Organic-rich Gas Shale”. SPE Journal, 2017, Volume 22, Issue 06, 1963–1983 (https://doi.org/10.2118/182667-PA).

[15] Blasingame, T. A., **Olorode, O. M.****, Odunowo, T. O., Moridis, G. J., Freeman, C. M., 2014. “Evaluation of Well Performance for the Slot-Drill Completion in Low and Ultra-Low Permeability Oil and Gas Reservoirs". SPE Journal, 2014, Volume 19, Issue 05, 748–760 (https://doi.org/10.2118/164547-PA).

[16] **Olorode, O. M.****, Freeman, C. M., Moridis, G. J., Blasingame, T. A. 2013. “High-Resolution Numerical Modeling of Complex and Irregular Fracture Patterns in Shale Gas and Tight Gas Reservoirs”. SPE Reservoir Evaluation & Engineering, 2013, Volume 16, Issue 04, 443–455 (https://doi.org/10.2118/152482-PA).

PEER-REVIEWED ARTICLES & BOOK CHAPTER

- **O. M. Olorode****, Wang, B., Rashid, H*. (2021). Numerical Modeling of Fractured Unconventional Oil and Gas Reservoirs. Chapter 10 of the *Advanced Modeling with the MATLAB Reservoir Simulation Toolbox (MRST)*, 409-453, Cambridge University Press (https://doi.org/10.1017/9781009019781).
- **O. M. Olorode**, Y. I. Akkutlu, Y. Efendiev. "Modeling of Compositional Gas Transport in Shale as a Deformable Porous Medium". Peer-reviewed article in the 6th Biot Conference Proceedings, July 2017 (https://doi.org/10.1061/9780784480779.246).

CONFERENCE MANUSCRIPTS

[1] B. Zhou, Z. Chen, Z. Song, X. Zhao, B. Wang, and **O. M. Olorode**. "A New Numerical Well-test Model Using An Analytically Modified Embedded Discrete Fracture Model", presented at the International Petroleum Conference, Saudi Arabia, February, 2024.

[2] A. Abdullah*, H. Rashid*, and **O. M. Olorode****. "Numerical and Experimental Studies of Coupled THM Processes in Fractured Tight Rocks", presented at the 57th U.S. Rock Mechanics/Geomechanics Symposium, Atlanta, Georgia, USA, June, 2023 (https://doi.org/10.56952/ARMA-2023-0810).

[3] **O. M. Olorode****, H. Amer*, and H. Rashid*. "The role of diffusion in primary and enhanced oil recovery from fractured unconventional reservoirs". URTEC-208387-MS, presented at the Asia Pacific Unconventional Resources Technology Conference in November, 2021 (https://doi.org/10.15530/AP-URTEC-2021-208387).

[4] H. Rashid*, **O. M. Olorode****, and C. Chukwudozie. "An iteratively coupled model for flow, deformation, and fracture propagation in fractured unconventional reservoirs". URTEC-208314-MS, presented at the Asia Pacific Unconventional Resources Technology Conference in November, 2021 (https://doi.org/10.15530/AP-URTEC-2021-208314).

[5] T. Ihunde* and **O. M. Olorode****. "Application of physics informed neural networks to compositional modeling." URTEC-208310-MS, presented at the Asia Pacific Unconventional Resources Technology Conference in November, 2021 (https://doi.org/10.15530/AP-URTEC-2021-208310).

[6] B. Y. Kim, **O. M. Olorode**, Y. I. Akkutlu. "Multi-Scale Analysis of CO Injection as Improved Shale Gas Recovery Method". SPE 195528-MS, presented at the SPE Europec featured at the 81st EAGE Conference and Exhibition, 3-6 June, 2019, London, England, UK (https://doi.org/10.2118/195528-MS).

[7] **O. M. Olorode****, Y. I. Akkutlu, Y. Efendiev. "Modeling of Compositional Gas Transport in Shale as a Deformable Porous Medium". Peer-reviewed article in the 6th Biot Conference Proceedings, July 2017 (https://doi.org/10.1061/9780784480779.246).

[8] I. Y. Akkutlu, S. Baek, **O. M. Olorode**. "Shale Resource Assessment in the Presence of Nanopore Confinement". SPE-2670808-MS, presented at the URTeC Conference in July 2017 (https://doi.org/10.15530/URTEC-2017-2670808).

[9] **O. M. Olorode****, Y. I. Akkutlu, Y. Efendiev. "A Compositional Model for CO2 Storage in Deformable Organic-Rich Shales". SPE-185792-MS, presented at the EUROPEC Conference in June 2017 (https://doi.org/10.2118/185792-MS).

[10] **O. M. Olorode****, Y. I. Akkutlu, Y. Efendiev. "Compositional Reservoir Flow Simulation for Organic-rich Gas Shale". SPE 182667-MS, presented at the SPE Reservoir Simulation conference in February 2017 (https://doi.org/10.2118/182667-MS).

[11] T. A. Blasingame, **O. M. Olorode**, T. O. Odunowo, G.J. Moridis, C.M. Freeman. "Evaluation of Well Performance for the Slot-Drill Completion in Low and Ultra-Low Permeability Oil and Gas Reservoirs". SPE 164547-MS, presented at the SPE Unconventional Resources Conference in April 2013 (https://doi.org/10.2118/164547-MS).

[12] **O. M. Olorode**,** C. M. Freeman, G. J. Moridis, T. A. Blasingame. "High-Resolution Numerical Modeling of Complex and Irregular Fracture Patterns in Shale Gas and Tight Gas Reservoirs". SPE 152482-MS, presented at the SPE Latin America and Caribbean Petroleum Engineering Conference in January 2012 (https://doi.org/10.2118/152482-MS).

INVITED TALKS/PRESENTATIONS

- Civil Engineering Departmental Seminar at New Jersey Institute of Technology, November 2023
  - Title: Numerical Modeling of Unconventional Energy Resources.
- Southeast Symposium on Contemporary Engineering Topics (SSCET) & UNO Engineering Forum, Little Rock, AR, September, 2022
  - Title: Modeling of Coupled Physical Processes in Tight Rocks.
- Energy Resources Engineering Departmental Seminar at Stanford University, October 2021
  - Title: Multiscale Modeling of Coupled Physical Processes in Tight Rocks. Please Watch video here
- Petroleum Engineering Departmental Seminar at University of Wyoming, September 2021
  - Title: Numerical Modeling of Unconventional Oil and Gas Reservoirs.
- Plenary Talk at the MRST Simulation Symposium, September 2021
  - Title: Numerical Modelling of Fractured Unconventional Oil and Gas Reservoirs. Please Watch video here
- Southeast Symposium on Contemporary Engineering Topics (SSCET) & UNO Engineering Forum, New Orleans, LA, September, 2019
  - Title: Numerical Modeling of Multiscale Fractures in Unconventional Oil and Gas Reservoirs.