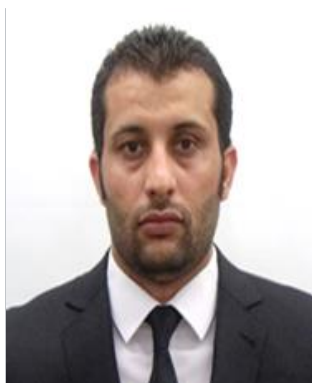




Name: Dr. Rida Mohamed Elgaddafi

Rank: Assistant Professor - Petroleum Engineering

Personal Information

Nationality: Libyan

AU Joining Date: 05 Sep 2021

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Professional Information

Education:

Qualification: Doctorate
Major: Petroleum engineering
College/University: University of Oklahoma
Year: 2017

Qualification: Masters
Major: Petroleum engineering
College/University: University of Oklahoma
Year: 2011

Qualification: Bachelor
Major: Petroleum engineering
College/University: University of Tripoli
Year: 2007/2008

Specialization:

- Drilling and Fracturing fluids' rheology and stability
- Wellbore cleanout and hydraulics
- Multiphase flow in pipe and annulus
- Well integrity and control.
- Tubulars corrosion at HPHT
- Produced Water Treatment
- Nanoparticles Technology
- Artificial intelligence and Machine Learning application in oil and gas industry (Digital transformation)

	- Sustainability and Low-carbon footprint in oil and gas industry
Current Academic Position:	Assistant Professor - Petroleum Engineering
Current Professional Positions:	NA
Previous Administrative Position Held:	NA
Previous Academic Positions Held:	Assistant Professor - Petroleum Engineering Australian University 2021 - Present Teaching assistant University of Oklahoma 2012 - 2017
Fellowships And Honors:	Fellowships: - Postdoctoral Fellowship - University of Oklahoma - USA, 2017-2018. - Postdoctoral Fellowship - University of Oklahoma - USA, 2019-2020. - Co-ordinated project activities and supervising graduate research assistants (2019) - SPE - Society of Petroleum Engineers (member) - AADE - American Association of Drilling Engineers (member) - Reviewer in the below listed journals: - 2016 – current Technical Reviewer for Journal of Petroleum Science and Engineering (JPSE) - 2016 – current Technical Reviewer for Journal of Natural Gas Science and Engineering (JNGSE) - 2016 – current Technical Reviewer for Journal of Desalination and Water Treatment - 2016 – current Technical Reviewer for SPE Drilling and Completion Journal - 2017 – current Technical Reviewer for journal of Fuel - 2021 – current Technical Reviewer for Multidisciplinary Digital Publishing Institute (MDPI) - 2022 - current Technical Reviewer for Journal of Petroleum. - 2024 - Editor at Petroleum & Petrochemical Engineering Journal (PPEJ) (ISSN: 2578-4846). Honors: - Excellence scholarship awarded by the BP-NOC (British Petroleum and National Oil Corporation), 2008 – 2011. - Distinguished Master Student Award (The University of Oklahoma 2012) - Distinguished Research Assistant Award (The University of Oklahoma 2015) - Distinguished Research Assistant Award (The University of Oklahoma 2016) - Outstanding Reviewer of the Year 2016, journal of natural gas science and engineering (JNGSE) - Outstanding Reviewer of the Year 2017, journal of petroleum science and engineering (JPSE)
Teaching Experience:	Assistant Professor Australian University 2021 - Present - 21SPTE410 Project Design and Evaluation

	- 21SPTE410 Fluid Mechanics - 21SPTE422 Environmental Protection (PBL) - 21SPTE412 Selected Topics (PBL) - 15FPTE120 Petroleum Engineering Material - 15FPTE213 Environmental issues in Oil and Gas Industry - 21SPTE420 Senior Petroleum Project Teaching assistant University of Oklahoma 2012 – 2017 - PE 3313 Drilling I - PE 4323 Drilling II - PE 3223 Fluid Mechanics - PE 5353 Advanced Drilling - PE 4331 Drilling Engineering Laboratory
Industrial And Technical Experience:	<u>Industrial Experience:</u> Postdoctoral Research Associate – Short-term projects (2018 and 2019) Well construction Technology Center, University of Oklahoma, USA Drilling Engineer - Training Internship (2006) Waha Oil Company, E59 Gallo Field, Libya Drilling Engineer - Training Internship (2005) Waha Oil Company, Onshore Oil Field, Libya <u>Technical Experience:</u> Participated as Postdoctoral Research associate and research assistant in the following projects: 1. Advanced Study on Stability of Modern Drilling Foams, Postdoctoral Researcher Associate. 2. Short-term industrial projects funded by service oil and gas companies (Shell, Baker Hughes, and Cimarex), Postdoctoral Researcher Associate. 3. Removal of Oil from Produced Water Using Magnetic Nanoparticles, Postdoctoral Researcher Associate. 4. Research and Development on Critical (Sonic) Flow of Multiphase Fluids through Wellbores in Support of Worst Case-Discharge Analysis for Offshore Wells, Postdoctoral Researcher Associate. 6. Effect of H₂H and CO₂ in HPHT wells on tubular and cement, Research Assistant 7. Advanced Study on Rheology of Modern Drilling Foams, Research Assistant 8. Fiber-containing Sweep Fluids for Ultra-Deepwater Drilling Applications, Research Assistant 9. Production decline analysis for Intisar (103A) field
Research Interest:	Wellbore cleanout (cuttings/solids transport) Well integrity and control. Drilling/fracturing fluid rheology and wellbore hydraulics Multiphase flow in pipe and annulus Flow assurance

	Application of nanoparticles for environmental protection in oil industry Produced Water treatment in oil and gas fields. Degradation of cement and tubulars Computational fluid dynamic (CFD) Application of Machine Learning and Digital transformation in oil industry Optimization of Drilling operational parameters Sustainable and Clean Energy (towards clean fossil energy and geothermal energy)
Research Grants:	- Principle investigator (PI) of an internal funded Research Project titled "Experimental Investigation and Machine Learning Algorithms Modeling of Horizontal Wellbore Cleanout by Fibrous Sweep Fluids " (KWD 1,200) - (CO-PI) of an internal funded Research Project titled "Laboratory Investigation of Using Recycled Tires Waste as an Alternative for Conventional Drilling Fluid Additives" (1300 KD). - (CO-PI) of an internal funded Research Project titled " Evaluating the Rheological Properties of Synthetic-Based Muds (SOBMs), Well Drilling Fluids with Nanoparticles Using a Taylor-Couette Device in Laminar and Turbulent Flows " (1200 KD). - Collaboration/ Consulting with Sappi South Africa Ltd. to evaluate the effectiveness of a waste material (Chrome-Free Lignosulfonate) in being used as a drilling fluid additive (KWD 1980). - Collaboration/ Consulting with Kuwait Integrated Petroleum Industries Company (KIPIC) to evaluate the effect of frequent fouling in Preheat Heat exchangers in Crude oil unit (Fund status: under review). - (CO-PI) of an internal funded Research Project titled "Advancing Fouling Prediction and Mitigation Strategies in Al Zour Refinery (ZOR) Preheat Exchangers: Leveraging Empirical Evidence and Artificial Intelligence"(KWD 7500).
Research and Publications including Journal and Books:	1. Rida Elgaddafi, Ramadan Ahmed, Raj Kiran, Saeed Salehi. 2026. Modeling and experimental studies on high-velocity slug and churn gas-liquid upward flows in vertical pipes, Geoenergy Science and Engineering, Volume 257, Part A, 2026, 214210, ISSN 2949-8910. 2. Biltayib Misbah, Sedaghat, Rana N. Malhas, Rida Elgaddafi, 2025. Experimental Analysis of Synthetic Oil-Based Mud Enhanced with Zinc Oxide Nanoparticles: Comparing Rheological Models, Petroleum Research Journal (under review). 3. Biltayib Misbah, Rida Elgaddafi, Rana N. Malhas, Suad Al Radhwan, Asama Hussain, Ali Hersi. 2024. Exploring the Rheology Characteristics of Flowzan and Xanthan Polymers in Drilling Water Based Fluids at High-Temperature and High-Shear Rates, Geoenergy Science and Engineering. (in progress). 4. Elgaddafi, R.M., Ahmed, R., Salehi, S., Alsaba, M.T., Biltayib, B.M., Ikeokwu, C.C. and Amadi, K.W., 2023, July. Modeling Two-Phase Flow in Vertical and Deviated Wellbores Using Machine Learning Method. KeAi petroleum Journal (in progress). 5. Misbah, B., Sedaghat, A., Balhasan, S., Elgaddafi, R., Malayer, M.A., Malhas, R.N., Omar, M. and Benomran, M., 2023. Enhancing thermal stability and filtration control for water-based drilling fluid using

- viscosifier polymers and potassium chloride additives. *Geoenergy Science and Engineering*, 230, p.212235.
6. Osorio, J., Ahmed, R. and **Elgaddafi**, R., 2022. Oilfield-produced water treatment using bare maghemite nanoparticles. *Results in Engineering*, 16, p.100641.
 7. **Elgaddafi**, R., Ahmed, R., Kiran, R., Salehi, S. and Fajemidupe, O., 2022. Experimental and modeling studies of gas-liquid flow in vertical pipes at high superficial gas velocities. *Journal of Natural Gas Science and Engineering*, 106, p.104731.
 8. Jeon, J., Ahmed, R., **Elgaddafi**, R. and Teodoriu, C., 2022. Hydrogen embrittlement of high-strength API carbon steels in H₂S and CO₂ containing environments. *Journal of Natural Gas Science and Engineering*, 104, p.104676.
 9. Kiran R., Salehi S., Ahmed R., **Elgaddafi** R. and Suri A. 2021. Characterization of Two-Phase Flow in Annulus using Image Processing and Estimation of Void Fraction, *Chemical Engineering Research and Design* (under review).
 10. Ahmed R. Jeon J., **Elgaddafi** R. and Teodoriu C. 2021. Hydrogen Embrittlement of High-Strength API Carbon Steels in H₂S and CO₂ Containing Environments, *Journal of Natural Gas Science and Engineering* (under review).
 11. Tale, S., Ahmed, R., **Elgaddafi**, R. and Teodoriu, C., 2021. Sulfide Stress Cracking of C-110 Steel in a Sour Environment. *Corrosion and Materials Degradation*, 2(3), pp.376-396.
 12. **Elgaddafi**, R., Ahmed, R., Karami, H., Nasser, M. and Hussein, I., 2021. A Mechanistic Model for Wellbore Cleanout in Horizontal and Inclined Wells. *SPE Drilling & Completion*, pp.1-17.
 13. **Elgaddafi**, R., Ahmed, R., Osisanya, S. 2021. Modeling and experimental study on the effects of temperature on the corrosion of API carbon steel in CO₂-Saturated environment, *Journal of Petroleum Science and Engineering*, (19), p. 107816.
 14. **Elgaddafi**, R., Ahmed, R., Shah, S. 2021. The Effect of Fluid Flow on CO₂ Corrosion of High-Strength API Carbon Steel, *Journal of Natural Gas Science and Engineering*, Volume 86, 2021,103739, ISSN 1875-5100.
 15. Theurer J., Ajagbe, O., Osorio, J., **Elgaddafi** R., Ahmed R., Walters, K., and Abbott, B. 2020. Removal of Residual Oil from Produced Water Using Magnetic Nanoparticles, *SPE Journal*, SPE-199466-PA.
 16. **Elgaddafi**, R., Ahmed, R. and Shah, S., 2021. Corrosion of carbon steel in CO₂ saturated brine at elevated temperatures. *Journal of Petroleum Science and Engineering*, 196, p.107638.
 17. Kiran, R., **Elgaddafi**, R., Ahmed, R., Salehi, S., Griffith C. A., and Fajemidupe T. 2020. Wellbore fluid sonic conditions during blowouts, *Journal of Petroleum Science and Engineering*, (195), p. 107822.
 18. Firoze Akhtar T., Ahmed R., **Elgaddafi** R., Shah S. and Amani M. 2018 Rheological Behavior of Aqueous Foams at High Pressure, *Journal of Petroleum Science and Engineering* 162, 214-224.
 19. Rojas, S., Ahmed, R., **Elgaddafi**, R., and Matthew G. 2017. Flow of power-law fluid in a partially blocked eccentric annulus, *Journal of Petroleum Science and Engineering*, 157, 617–630.

20. **Elgaddafi** R., Ahmed R., and Shah S. 2017. Modeling and Experimental Studies on CO₂-H₂S Corrosion under High-Pressure, Journal of Petroleum Science and Engineering, 156, 682-696.
21. **Elgaddafi**, R., Ahmed, R. M., Shah, S. N., Hassani, S., Osisanya, S. O. 2016. Corrosion of C110 carbon steel in a high-pressure aqueous environment with mixed hydrocarbon and CO₂ gas, Journal of Petroleum Science and Engineering, 146, 777–787.
22. **Elgaddafi**, R., Ahmed, R. M., Shah, S. 2016. N. Modeling CO₂-H₂S Corrosion of Tubular at Elevated Pressure and Temperature, Research Journal of Applied Sciences, Engineering and Technology, 13(7): 510-524.
23. **Elgaddafi**, R., Ahmed, R. M., and Growcock, F. 2016. Settling Behavior of Particles in Fibrous Herschel Buckley Fluid, Powder Technology, 301, 782-793.
24. **Elgaddafi**, R., Naidu, A., Ahmed, R. M., Shah, S. N., Hassani, S., Osisanya, S. O., Saasen, A. 2015. Modeling and experimental study of CO₂ corrosion on carbon steel at elevated pressure and temperature. Journal of Natural Gas Science and Engineering, 27, 1620–1629.
25. George, M., **Elgaddafi**, R., Ahmed, R., and Growcock, F. 2014. Performance of Fiber-Containing Synthetic-Based Sweep Fluids, Journal of Petroleum Science and Engineering, Vol. 119, July, Pages 185–195.
26. **Elgaddafi**, R., Ahmed, R., George, M., and Growcock, F. 2012. Settling behavior of spherical particles in fiber-containing drilling fluids, Journal of Petroleum Science and Engineering, Volumes 84–85, April 2012, Pages 20–28.

Selected Technical Research Reports

1. Ahmed, R., Shah, S., Osisanya, S., Hassani, S., Omosebi, O., Elgaddafi, R., Maheshwari, H., Srivastava, A., Hwang, J., Sharma, M., Tale, S., Jeon, J., 2015. Effect of H₂S and CO₂ in HPHT Wells on Tubulars and Cement, Final Report, BSEE Project: Award Number: E12PC00035, June 9, 2015, <http://www.bsee.gov/Technology-and-Research/Technology-AssessmentPrograms/Projects/Project-691/>
2. Ahmed, R., Shah, S., Osisanya, S., Hassani, S., Omosebi, O., Elgaddafi, R., Maheshwari, H., Srivastava, A., Hwang, J., Sharma, M., Tale, S., Jeon, J., 2015. Effect of H₂S and CO₂ in HPHT Wells on Tubulars and Cement, Monthly Reports, BSEE Project: Award Number: E12PC00035, August 2012 to March 2015, <http://www.bsee.gov/Technology-and-Research/Technology-AssessmentPrograms/Projects/Project-691/>.
3. Salehi, S., Ahmed, R., Elgaddafi, R., Kiran R., 2018. Research and Development on Critical (Sonic) Flow of Multiphase Fluids through Wellbores in Support of Worst Case-Discharge Analysis for Offshore Wells, Literature review report, BSEE Project: Award Number: M16PS00059, January 2018.
4. Salehi, S., Ahmed, R., Elgaddafi, R., Kiran R., 2018. Research and Development on Critical (Sonic) Flow of Multiphase Fluids through Wellbores

	in Support of Worst Case-Discharge Analysis for Offshore Wells, CFD Simulation report, BSEE Project: Award Number: M16PS00059, March 2018. 5. Salehi, S., Ahmed, R., Elgaddafi, R., Fajemidupe O., Kiran R., 2018. Research and Development on Critical (Sonic) Flow of Multiphase Fluids through Wellbores in Support of Worst Case-Discharge Analysis for Offshore Wells, Worst-Case Discharge – Computational Tool, BSEE Project: Award Number: M16PS00059, October. 2018.
Paper Presentations at Professional Conferences:	1. Biltayib, B.M., Elgaddafi, R., Amadi, K., Malhas, R.N., Damrah, S. and Balhasan, S.A., 2025, August. Novel Viscometer Design for Investigation of the Rheological Properties of Drilling Fluid at Low and High Shear Rate Conditions. In SPE Nigeria Annual International Conference and Exhibition (p. D031S014R001). SPE. 2. Elgaddafi, R.M., Amadi, K., Biltayib, B.M., Al Saba, M.T., Omar, M., Dashti, A., Alali, M. and Alabdullah, M., 2025, May. Towards Autonomous Rotary Drilling System: A Robust Rate of Penetration Model for Drilling Operation Using Artificial Intelligence. In SPE EOR Conference at Oil and Gas West Asia (p. D011S012R002). SPE. 3. Amadi, K.W., Elgaddafi, R.M., AlAli, M.A. and Dashti, A.M., 2024, October. Reconstructing Missing and Non-Recorded Well Log Data Using Machine Learning Techniques. In Mediterranean Offshore Conference (p. D021S023R006). SPE. 4. Amadi, K.W., Alsaba, M.T., El Achkar, J.H. and Elgaddafi, R.M., 2024, May. AI-Driven Green Optimization in Well Construction: Carbon Emission Management Through Technical Limit Performance Benchmarking. In SPE Gas & Oil Technology Showcase and Conference (p. D011S003R003). SPE. 5. Alsaba, M., Elgaddafi, R., Ismael, A., Marake, T. and Hersi, A., 2024, April. Laboratory Evaluation to Assess the Performance of a New Eco-Friendly Drilling Fluid Additive. In SPE EOR Conference at Oil and Gas West Asia (p. D011S009R001). SPE. 6. Elgaddafi, R.M., Al Saba, M.T., Ahmed, R., Omar, M., Biltayib, B. and Almarshad, A., 2024, April. Application of Machine Learning Method for Modeling Settling Behavior of a Spherical Particle in Fibrous Drilling Fluids. In SPE EOR Conference at Oil and Gas West Asia (p. D021S027R002). SPE. 7. Elgaddafi, R.M., Ahmed, R., Salehi, S., Alsaba, M.T., Biltayib, B.M., Ikeokwu, C.C. and Amadi, K.W., 2023, July. Modeling Two-Phase Flow in Vertical and Deviated Wellbores Using Machine Learning Method. In SPE Nigeria Annual International Conference and Exhibition (p. D021S002R003). SPE. 8. RM Elgaddafi, M Al Saba, A Almarshad, K Amadi. 2023. The Application of Recycled Auto-Tires Rubber as an Effective Drilling Fluid Additive: Towards a Sustainable Oil and Gas Industry. SPE-SPE-214525-MS. 9. KW Amadi, MT Alsaba, I Iyalla, R Prabhu, R.M. Elgaddafi. 2023. Machine Learning Techniques for Real-Time Prediction of Essential Rock Properties Whilst Drilling. SPE-217113-MS. 10. Misbah, B., Malhas, R.N. and Elgaddafi, R., 2023. Reducing Environmental Impact of Drilling Operations through the Implementation of Organic

- Waste Additives for Environmental Protection. Conference: The 8th World Congress on Civil, Structural, and Environmental Engineering
11. **Elgaddafi, R.**, Ahmed, R., Karami, H., Nasser, M. and Hussein, I., 2021, March. Mechanistic Modeling of Wellbore Cleanout in Horizontal and Inclined Wells. In SPE/ICoTA Well Intervention Conference and Exhibition. 23-24 March, Woodlands, Texas, USA.
 12. Thiessen, S., Han, O., Ahmed, R., and **Elgaddafi R.** 2021. An Experimental Study Of Coefficient of Discharge For Consistent Hole Perforating and The Effect on Limited Entry Designs, SPE Hydraulic Fracturing Technology Conference and Exhibition, 2-4 February 2021, Woodlands, Texas, USA.
 13. **Elgaddafi, R.M.**, Soriano, V., Ahmed, R. and Osisanya, S., 2021, April. The Essence of Horizontal Drilling Challenges in Depleted Reservoirs. In SPE Western Regional Meeting, April 20–22, Virtual.
 14. Theurer J., Ajagbe, O., Osorio, J., **Elgaddafi R.**, Ahmed R., Walters, K., and Abbott, B. 2020. Removal of Residual Oil from Produced Water Using Magnetic Nanoparticles, SPE International Conference and Exhibition on Health, Safety, Environment, and Sustainability, 27-31 July 2020, Virtual.
 15. **Elgaddafi, R.**, and Ahmed R. 2020. Fibrous Cleanout Fluids in Horizontal and Inclined Wells. In SPE/ICoTA Well Intervention Conference and Exhibition. 24-25 March, Woodlands, Texas, USA.
 16. **Elgaddafi, R.**, Soriano, V., Ahmed, R., and Osisanya, S. 2021. The Essence of Horizontal Drilling Challenges in Depleted Reservoir, SPE Western Regional Meeting, April – 1 May 2021 in Bakersfield, California, USA.
 17. Phi, T. **Elgaddafi, R.**, Al Ramadan M. Ahmed R. and Teodoriu, C. 2019. Well integrity Issues: Extreme High-Pressure High-Temperature Wells and Geothermal Wells (A Review). SPE Thermal Well Integrity and Design Symposium, 19-21 November, Banff, Alberta, Canada.
 18. **Elgaddafi, R.**, Kiran, R., Ahmed, R. Saleh. S. 2020. Development of a Computational Tool for Worst-Case Discharge Rate. SPE Annual Technical Conference and Exhibition to be held 5 – 7 October 2020 in Denver, Colorado, USA.

Technical Presentations:

1. Elgaddafi, R. 2018. Modeling Two-Phase Flow and WCD Rate in Pipe, presented at the Final BOEM Project meeting, New Orleans, LA, Oct.12, 2018.
2. Elgaddafi, R. 2015. Corrosion Behavior of Tubulars under Sour Gas Environment, presented at the Final BSEE Project meeting, Sterling, VA, May 28, 2015.
3. Elgaddafi, R. 2014. Corrosion Behavior of Tubulars under Sour Gas Environment, presented at the BSEE Technical Advisory Board (TAB) meeting, Norman, OK, May 9, 2014.
4. Elgaddafi, R. 2013. Corrosion Behavior of Tubulars under Sour Gas Environment, presented at the BSEE Technical Advisory Board (TAB) meeting, Houston, TX, Nov. 7, 2013.
5. Elgaddafi, R. 2011. Settling Behavior of Spherical Particles in Fiber Containing Drilling Fluids, Presented at Graduate seminar, Norman, OK, November 2011

	6. Elgaddafi, R., Ahmed, R., George, M., and Growcock, F. Settling Behavior of Spherical Particles in fiber-containing Drilling Fluids, OTC Poster, 2011.
College Service including committee Membership:	NA
National Service:	NA
College Committees:	Department Council Project Based Learning (PBL) Committee Labs Committee PBL Committee Research & Faculty Development Committee Curriculum committee - Spring 2022 - Present Chair of Lab committee - Fall 2022 - Fall 2024