

Dr. Fahd Saeed Abdullah Al-Akbari

Post-Doctoral Researcher · Petroleum Engineering · AI & Machine Learning

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49	33	874	17 / 26	23	150+
Journal articles & chapters	Q1 journal papers	Citations (Scholar)	h-index / i10-index	First-author papers	Peer reviews

PROFILE

Petroleum engineer applying machine learning and data-driven methods across the energy sector — from drilling fluids and reservoir fluid properties (bubble point pressure, GOR) to sand control, CO_2 storage and hydrogen. Post-Doctoral Researcher at the Interdisciplinary Research Center for Hydrogen Technologies and Carbon Management, King Fahd University of Petroleum & Minerals (KFUPM). Editorial board member of three journals, mentor to graduate and undergraduate researchers, and developer of mobile apps and websites.

AI & Machine Learning · CCUS · Drilling Fluids · Reservoir Fluid Properties · Sand Control · Hydrogen Storage · Mobile & Web Development

PROFESSIONAL EXPERIENCE

Post-Doctoral Researcher — IRC for Hydrogen Technologies & Carbon Management, KFUPM, Saudi Arabia — Jun 2025 – Present

- Interpretable ML and physics-informed neural networks (PINNs) for porous-carbon surface area and CO_2 solubility.
- CO_2 geo-storage: gels and sealants for conformance control, caprock wettability, acid treatments for injectivity, molecular dynamics of rock–CO_2–brine systems.
- Hydrogen wettability estimation for underground hydrogen storage; graphene and sustainable materials.

Post-Doctoral Researcher — Universiti Teknologi PETRONAS (UTP), Malaysia — Jul 2023 – May 2025

- Mass/heat transfer and static/dynamic reservoir modeling; ASP flooding optimization for heavy oil with CMG.
- Machine/deep learning for geomechanical properties, sand production, gas solubility, MMP, flow regimes and sweep efficiency.
- Experimental work on surfactants, emulsions, nanocrystal stabilizers, sand consolidation and CO_2 mineralization; mentored 2 PhD, 1 MSc and 6 undergraduate students.

Researcher & Teaching Assistant — Universiti Teknologi PETRONAS, Malaysia — Jul 2019 – Feb 2023

- ML for petroleum engineering (MATLAB, Python), sand control, geomechanics and reservoir fluid properties.
- Taught Drilling Hydraulics, Drilling Engineering, Production Engineering, Petroleum Production & Optimization, Final Year Project.

Researcher — King Fahd University of Petroleum & Minerals, Saudi Arabia — Sep 2013 – Jan 2017

- Drilling fluids (nanoclay and nanosilica additives) and machine learning applications in petroleum engineering.

Teaching Assistant — Hadhramout University, Yemen — Sep – Nov 2012

Petroleum Engineer (Training) — Calvalley Oil Company, Block 9, Yemen — Jun – Aug 2010

EDUCATION

Ph.D. Petroleum Engineering — Universiti Teknologi PETRONAS, Malaysia (#9 worldwide, QS 2026) — 2019 – 2023

Thesis: Development of Critical Total Drawdown and Geomechanical Properties Prediction Models: A Data-Driven Approach

M.Sc. Petroleum Engineering — King Fahd University of Petroleum & Minerals, Saudi Arabia (#4 worldwide, QS 2026) — 2013 – 2017

Thesis: Evaluation of the Effect of Nanoclay and Nanosilica on the Properties of Water-Based Drilling Fluid

B.Eng. Petroleum Engineering — Hadhramout University, Yemen — 2007 – 2012

EDITORIAL ROLES & PEER REVIEW

- **Youth Editorial Board Member** — *Petroleum* (KeAi; IF 5.5), 2026 – 2027
- **Editorial Board Member** — *Emerging Trends in Engineering and Sustainability* (Al-Naji University, Iraq)

- **Editor for Earth Sciences** — *Journal of Asian Scientific Research* (AESS Publications)
- **Peer reviewer — 150+ reviews for 15 journals**, incl. Scientific Reports, ACS Omega, Results in Engineering, Colloids and Surfaces A, Geoenergy Science and Engineering, Engineering Applications of AI, IEEE Access, Arabian J. Science and Engineering, J. Petroleum Exploration and Production Technology.
- Technical Program Committee, IEEE AUPEC 2024; Session Chair, ICoFAST Conference.

AWARDS & HONOURS

- Selected as Youth Editorial Committee Member, *Petroleum* journal (2026 – 2027).
- Third Place, Postgraduate Division — SPE Asia Pacific Regional Student Paper Contest, Adelaide, Australia (2022).
- Finalist, SLB Delfi Data Science / Machine Learning Innovation Competition, Malaysia (2023).
- Best Publication Award (12 Q1/Q2 papers), Centre of Research in Enhanced Oil Recovery, UTP (2022); GA Merit Award, UTP (2021).
- Featured / Spotlight article (2023) and Top-Downloaded article (2024), *The Canadian Journal of Chemical Engineering*.
- Mentee won the UTP Engineering Scientific Writing Competition (2024).
- Scholarships: PhD (GA & GRA schemes), UTP, 2019 – 2023; MSc, KFUPM, 2013 – 2017.

SELECTED PUBLICATIONS — 15 of 55 · full list at www.falakbari.com

1. **Fahd Saeed Alakbari**, Ahmed Farid Ibrahim, Mahmoud Abdelnaby Carbon Dioxide Solubility Prediction for Carbon Capture and Storage (CCS) Applications: A Systematic Review. *Results in Engineering, Elsevier (2026)*. Q1 · IF 9.4
2. Mohamed Hammad Elsayed, **Fahd Saeed Alakbari**, Lamiaa E. Abd El-Haleem, Hamid Zentou, Ahmed F. Saber, Bosirul Hoque, Mahmoud M. Abdelnaby Graphene materials at scale: Synthesis routes, market and techno-economic landscape, and net-zero applications. *Sustainable Materials and Technologies, Elsevier (2026)*. Q1 · IF 9.7
3. M. R. Hossain, J. Khalil, A. Al-Fakih, **Fahd Saeed Alakbari**, A. Alshahrani, A. Almutlaqah A data-driven framework for mix design optimization of limestone calcined clay cement concrete using machine learning and experimental validation. *Case Studies in Construction Materials, e06507, Elsevier (2026)*. Q1 · IF 6.9
4. **Fahd Saeed Alakbari**, Marwa A. El Maghraby, Mahmoud Abdelnaby, M. A. Hussein, Ahmed Farid Ibrahim Interpretable Machine Learning Models for Predicting and Optimizing the Surface Area of Porous Activated Carbon Materials. *Petroleum Research, KeAi (2026)*. Q2 · IF 3.8
5. **Fahd Saeed Alakbari**, Marwa A. El Maghraby, Mahmoud Abdelnaby A User-Friendly Machine Learning Framework for Predicting Brunauer–Emmett–Teller Surface Area of Porous Materials. *Energy Geoscience, Elsevier (2026)*. Q1 · IF 4.7
6. **Fahd Saeed Alakbari**, Syed Mohammad Mahmood, Mahmoud M. Abdelnaby, Haithm Salah Hagar, Funsho Afolabi, Mysara Eissa Mohyaldinn Enhancing sand production assessment through accurate determination of Young's modulus and Poisson's ratio. *Scientific Reports 16(1): 6826, Nature Portfolio (2026)*. Q1 · IF 4.9 ✉ corresponding
7. J. N. Turkson, M. A. M. Yusof, V. Darkwah-Owusu, Y. A. Sokama-Neuyam, I. Fjelde, **Fahd Saeed Alakbari**, B. N. Tackie-Otoo An interpretable machine-learning-driven tool (HyWEC) for hydrogen wettability estimation: Implications for underground hydrogen storage. *International Journal of Hydrogen Energy, 155, 150256, Elsevier (2025)*. Q1 · IF 9.2
8. **Fahd Saeed Alakbari**, Mohammed Abdalla Ayoub, M. A. Awad, Tarek Ganat, Mysara Eissa Mohyaldinn, Syed Mohammad Mahmood A Robust Pressure Drop Prediction Model in Vertical Multiphase Flow: A Machine Learning Approach. *Scientific Reports, Nature Portfolio (2025)*. Q1 · IF 4.9
9. **Fahd Saeed Alakbari**, Mysara Eissa Mohyaldinn, Mohammed Abdalla Ayoub, Ibnelwaleed A. Hussein, Ali Samer Muhsan, Syahrir Ridha, Abdullah Abduljabbar A gated recurrent unit model to predict Poisson's ratio using deep learning. *Journal of Rock Mechanics and Geotechnical Engineering, Elsevier (2024)*. Q1 · IF 10.8 ✉ corresponding
10. **Fahd Saeed Alakbari**, Mysara Eissa Mohyaldinn, Mohammed Abdalla Ayoub, Ali Samer Muhsan, Ibnelwaleed A. Hussein A robust Gaussian process regression-based model for the determination of static Young's modulus for sandstone rocks. *Neural Computing and Applications, Springer (2023)*. Q1 · IF 6.0 ✉ corresponding
11. **Fahd Saeed Alakbari**, Mysara Eissa Mohyaldinn, Mohammed Abdalla Ayoub, Ali Samer Muhsan, Said Jadid Abdulkadir, Ibnelwaleed A. Hussein, Abdullah Abduljabbar Salih Prediction of Critical Total Drawdown in Sand Production from Gas Wells: Machine Learning Approach. *The Canadian Journal of Chemical Engineering, Wiley / CSChE (2022)*. Q2 · IF 2.2
12. **Fahd Saeed Alakbari**, Mysara Eissa Mohyaldinn, Mohammed Abdalla Ayoub, Ali Samer Muhsan, Ibnelwaleed Ali Hussein A reservoir bubble point pressure prediction model using the Adaptive Neuro-Fuzzy Inference System (ANFIS) technique with trend analysis. *PLOS ONE, Public Library of Science (2022)*. Q1 · IF 2.8 ✉ corresponding
13. **Fahd Saeed Alakbari**, M. E. Mohyaldinn, M. A. Ayoub, A. S. Muhsan, A. Hassan Apparent and plastic viscosities prediction of water-based drilling fluid using response surface methodology. *Colloids and Surfaces A: Physicochemical and Engineering Aspects 616, 126278, Elsevier (2021)*. Q1 · IF 5.4 ✉ corresponding
14. **Fahd Saeed Alakbari**, Mysara Eissa Mohyaldinn, Mohammed Abdalla Ayoub, Ali Samer Muhsan Deep learning approach for robust prediction of reservoir bubble point pressure. *ACS Omega, American Chemical Society (2021)*. Q1 · IF 5.2 ✉ corresponding

15. **Fahd Saeed Alakbari**, Mysara Eissa Mohyaldinn, Ali Samer Muhsan, Nurul Hasan, Tarek Ganat Chemical sand consolidation: from polymers to nanoparticles. *Polymers 12(5), MDPI (2020)*. **Q1 · IF 5.8**

Corresponding author on 16 papers (Scopus) · journal quartiles from Scopus · impact factors from JCR 2026.

SKILLS

Modeling & ML	Python (TensorFlow, PyTorch, Keras, Pandas), MATLAB	**Laboratory**	Core flooding, HPHT filter press & rheometer, gel strength, zeta potential, interfacial tension
Simulation	CMG-STARS, Ansys Fluent, COMSOL, Petrel		
Statistics	Statistica, Design Expert, Minitab, SPSS, OriginLab	**Analysis**	XRF, FTIR, NMR, gas chromatography
Development	Flutter/Dart, Swift, Kotlin, Java, Firebase, HTML/CSS/JS	**Languages**	Arabic (native), English (excellent)

TEACHING, MENTORING & MEMBERSHIPS

Courses taught: Drilling Engineering, Drilling Hydraulics, Reservoir Engineering, Enhanced Oil Recovery, Reservoir Rocks & Fluids, Production Engineering.

Mentoring: 2 PhD, 1 MSc and 9 undergraduate students (experiments, simulation, coding, theses and publications).

Memberships: SPE (5237275) · ACS (32685946) · Energy Institute (0082370) · Malaysia Board of Technologists (2308240203) · IET (1101102615).

Training: 40 courses and certifications, incl. Laboratory Personnel EHS Certification (2026), Interactive Teaching (Univ. of Tokyo), Deep Learning with MATLAB, and SPE/Elsevier courses.