Elvin Ismayilov

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RESEARCH INTERESTS

Multiphase gas-solid flow, fluidized bed reactors, chemical looping, clean hydrogen production, experimental measurement and data acquisition, plasma catalysis.

EDUCATION

Ph.D., Petroleum Engineering, University of Oklahoma, Norman, OK | August 2026 to present

- Mewbourne School of Petroleum and Geological Engineering. Research: plasma catalytic hydrogen production. Advisor: Dr. Baharak Sajjadi

M.S., Petroleum Engineering, University of Oklahoma, Norman, OK | August 2024 to December 2026

- GPA 3.66 / 4.00. Thesis: solid circulation rate measurement in a cold-flow dual fluidized bed. Advisor: Dr. Baharak Sajjadi

B.Eng., Petroleum Engineering, Baku Higher Oil School, Baku, Azerbaijan | 2015 to 2020

- Full merit scholarship

RESEARCH EXPERIENCE

Graduate Researcher, University of Oklahoma, Norman, OK | August 2024 to present

- Developed a continuous, non-intrusive method for measuring solid circulation rate (SCR) in a cold-flow dual circulating fluidized bed for chemical looping combustion and clean hydrogen production.
- Set up sensor data acquisition (DAQ) with pressure and flow sensors in LabVIEW, and wrote the Python data analysis code from raw signals to final figures.
- Designed and ran 72 steady-state test conditions across four Geldart Group B silica sand types, bed inventories of 2 to 6 kg and air flowrates of 50 to 500 L/min.
- Current Ph.D. work: plasma catalytic hydrogen production.

PUBLICATIONS

- Ismayilov, E., Sajjadi, B. "Pulsatile Solid Transfer in a Dual Circulating Fluidized Bed: Experimental Confirmation and Non-Intrusive Solid Circulation Rate Measurement." Manuscript in preparation.

INTELLECTUAL PROPERTY

- Invention disclosure on a solid circulation rate measurement method, under review at the University of Oklahoma Office of Technology Commercialization, 2026.

TEACHING EXPERIENCE

Graduate Teaching Assistant, Mewbourne School of Petroleum and Geological Engineering, University of Oklahoma | Fall 2024 to present

- PE 4533 Reservoir Engineering II, Dr. Rouzbeh Ghanbarnezhad Moghanloo, Fall 2026
- Rock Properties Lab, Dr. Son Dang, Spring 2025 and Spring 2026: run and demonstrate core analysis measurements for students, including porosity, permeability, resistivity, NMR, FTIR and mercury injection, plus core plug drilling and brine saturation.
- Statics and Dynamics, Dr. Baharak Sajjadi, Fall 2024 and Fall 2025
- Teach, grade assignments and exams, prepare solution keys and rubrics, and manage course materials in Canvas.

Lab Assistant, Mewbourne School of Petroleum and Geological Engineering, University of Oklahoma | Summer 2025

- Assisted the lab technician in renovating teaching lab rooms for the next semester.

PROFESSIONAL EXPERIENCE

Wellsite Geologist, SOCAR AQS, Baku, Azerbaijan | April 2020 to July 2024

- Supervised contractor mud logging, logging while drilling (LWD) and wireline operations as the company geologist on offshore and high-pressure, high-temperature (HP/HT) wells.
- Evaluated geology at the wellsite from drill cuttings, LWD and offset well data, and picked formation tops.
- Checked the quality of subsurface data and reports, including daily geology reports, cuttings descriptions and post-well documentation.

- Field assignments: Gunashli offshore HP/HT oil wells, West Absheron offshore high-angle wells, and Tuzgol underground gas storage wells in Ankara, Turkey.

Geology Intern, SOCAR AQS, Baku | June to July 2019 | **Summer Training Program**, Schlumberger, Baku | July 2019 (one week) | **Petroleum Engineering Intern**, SOCAR, Baku | June to July 2018

PROJECTS

Machine Learning for Petroleum Data: Time-Series Anomaly Detection, Data Analysis course final project, University of Oklahoma | Spring 2025

- Built Python machine learning models (scikit-learn, Keras, TensorFlow; k-nearest neighbors, random forest) over about 50,000 rows of operational data to flag drilling and production anomalies.

SKILLS

- **Experimental:** fluidized beds, pressure and flow sensors, data acquisition (DAQ), LabVIEW, core analysis (porosity, permeability, mercury injection, NMR, resistivity, FTIR)
- **Programming and data:** Python (pandas, NumPy, signal processing, time-series analysis, visualization), SQL, C++ (learning)
- **Machine learning:** scikit-learn, Keras, TensorFlow; k-nearest neighbors, random forest
- **Formation evaluation:** mud logging, LWD, wireline, cuttings analysis, petrophysical log interpretation
- **Software:** SLB Techlog, Petrel, PIPESIM, Microsoft Office

CERTIFICATIONS

- CS50's Introduction to Programming with Python, Harvard University, 2025
- Oil and Gas Industry Operations and Markets, Duke University Pratt School of Engineering, 2024
- Drilling Fluids Technology, Baku Drilling School, 2023
- Business Education for Engineers, BP and Baku Higher Oil School, 2020
- Offshore Survival and Safety (IMO), State Maritime Administration of Azerbaijan, 2016

AFFILIATIONS AND LANGUAGES

- Society of Petroleum Engineers (SPE), Society of Exploration Geophysicists (SEG)
- Azerbaijani (native), English (fluent), Turkish (fluent), Russian (intermediate)