OBADARE O. AWOLEKE, PhD

Assistant Professor in Petroleum Engineering

University of Alaska, Fairbanks
Department of Petroleum Engineering
407 Duckering Building
http://cem.uaf.edu/pete/people/obadare-awoleke.aspx

Fairbanks, AK 99775-5860
Voice: 907-474-7574
Fax: 907-474-5912
e-mail: ooawoleke@alaska.edu

RESEARCH INTERESTS

Well stimulation of conventional and unconventional reservoirs, experimental investigations into petroleum engineering phenomenon and the incorporation of uncertainty into petroleum engineering models using conventional statistical and machine learning techniques.

EDUCATION

PhD, Texas A&M University, Petroleum Engineering — May 2013
Dissertation: Dynamic Fracture Conductivity—An Experimental Investigation Based on Factorial Analysis (Advisor: Dr. Daniel Hill)

MS, Texas A&M University, Petroleum Engineering — Dec 2009
Thesis: Analysis of Data from the Barnett Shale with Conventional Statistical and Virtual Intelligence Techniques (Advisor: Dr. Robert Lane)

B.Sc., University of Ibadan, Nigeria, Petroleum Engineering — Dec 2001
Final Project: Influence of Well Length on Horizontal Well Productivity (Advisor: Dr. G.K. Falade)

PROFESSIONAL EXPERIENCE

Assistant Professor in Petroleum Engineering, — July 2013-present
University of Alaska Fairbanks

Teaching and Research Assistant, Petroleum Engineering, — Apr 2008-May 2013
Texas A&M University

Field Engineer I and II (Acidizing, Cementing, Coil tubing and Water Control), — Apr 2005-July 2007
BJ Services Nigeria

Associate Engineer (Acidizing, Cementing, Coil tubing and Fracturing), — July 2004-Mar 2005
BJ Services, USA

Engineer (Acidizing and Coil tubing), — Jan 2002-June 2004
BJ Services Nigeria

AWARDS AND RECOGNITION

UAF CITE Fellow	AY 2013/14
Graduate Fellowship in Petroleum Engineering, Texas A&M University	AY 2007/08

SCHOLASTIC ACTIVITIES

Courses taught/Co-taught

Graduate: PETE 693—Experimental and Data Analysis Methods in Petroleum Engineering

- Fall 2015, 11 enrolled
- Fall 2013, 21 enrolled. 15 in class and 6 via video conference from UAA. New class offered in the graduate curriculum
- Approved as a new course in catalog (PETE 687) on January 17th , 2016

Graduate: PETE 693—Well Stimulation/Advanced Well Completions and Stimulation Design

- Spring 2016, 9 enrolled
- Spring 2014, 16 enrolled. New class offered in the graduate curriculum

Graduate: PETE 689—Multiphase Flow in Pipes

- Fall 2016, xx enrolled (coming fall)
- Fall 2014, 19 enrolled

Undergraduate: PETE 426—Drilling Engineering

- Spring 2016, 26 enrolled (co-taught with Dr. Yin Zhang in an 80/20 ratio)
- Spring 2015, 44 enrolled. 41 in class and 3 via video conference from UAA.
- Spring 2014, 36 enrolled. 34 in class and 2 via video conference from UAA.

Undergraduate: PETE 476—Well Completions and Stimulation Design

- Fall 2016, xx enrolled (coming fall)
- Fall 2015, 23 enrolled
- Fall 2014, 28 enrolled

Mentoring and Supervision

Undergraduate students

1. Maryane Silva Ferreira—Brazilian Exchange Student. Summer Internship (2014). Worked with a graduate student on building a setup to investigate wormhole growth during the Cold Heavy Oil Production with Sand Process.
2. Ange Djahon—Petroleum Engineering Junior. Working with a graduate student on building a setup to measure pressure drop during the multiphase flow of heavy oil, sand and gas. June 2016-present.
3. Sid Huhndorf—Petroleum Engineering Senior. “Comparing Approximate Bayesian Computation and MCMC (Markov Chain Monte Carlo) methodologies for Uncertainty Quantification in Unconventional Reservoirs” June 2016-present.

PETE Graduate students (Masters Chair or Co-chair)

1. Kishan Joshi—Uncertainty Quantification of Gas Production in the Barnett Shale Using Time Series Analysis (**Graduated Fall 2015**)
2. Arya Narayan—An Investigation into the Cold Heavy Oil Production with Sand Process Using Synthetic Cores and Designed Experiments (**Graduated Spring 2016)**
3. Aditya Nikam (co-chair: Dr. Ahmadi)—A Methodical Investigation into the Interaction Between a Hydraulic Fracture and A Natural Fracture Using Three Dimensional Finite Element Analysis (**Graduated Summer 2016**)
4. Omoruyi Ojo—Empirical Modeling of Multiphase Flow of Heavy Oil, Water and Sand (Expected graduation: Spring 2017)
5. Panav Hulsurkar—Empirical Modeling of Multiphase Flow of Heavy Oil, Water and Sand (Expected graduation: Spring 2017)
6. Keith Robertson III—Theoretical and Experimental Investigation into the Cold Heavy Oil with Sand Production Process (Expected graduation: Spring 2017)
7. Mohammad Kargarpour (chair: Dr. Ahmadi; **co-chair: Dr. Awoleke**)—Feasibility Study of In-situ Heat Generation for Oil Reservoirs Overlain by Permafrost (Expected graduation: Spring 2017)
8. Rahman Rashnur Mohammad (co-chair: Dr. Goddard)—Empirical Modeling of Fracture Conductivity Using Novel Statistical Methods (Expected graduation: Summer 2017)
9. Debashish Talukder (co-chair: Dr. Ahmadi)—Modeling the Interaction Between Multiple Hydraulic and Natural Fractures Using Three Dimensional Finite Element Analysis (Expected graduation: Summer 2017)
10. Anand Korde (co-chair: Dr. Ghosh)—Intermediate Scale Fracture Conductivity Modeling With Computational Fluid Dynamics (Expected graduation: Fall 2017/Spring 2018)
11. Pirayu Yuhun (chair: Dr. Ahmadi; co-chair: **Dr. Awoleke**)—Optimization of Well Placement in a Low Enthalpy Geothermal Reservoir Using Machine Learning Techniques (Expected graduation: Spring 2018)
12. Alan Abel (long distance student)—research topic still being fine-tuned. (Expected graduation: Fall 2017/Spring 2018)

PETE Graduate students (Masters Committee Member)

1. Behnam Zanganeh—Understanding Reservoir Engineering Aspects of Shale Oil Development on the Alaska North Slope (**Graduated Spring 2014**)
2. Srichand Poludasu—Using Experimental Design and Response Surface Methodology to Model Induced Fracture Geometry in Shublik Shale (**Graduated Fall 2014**)
3. Mohit Paryani—Approximate Bayesian computation for Probabilistic Decline Curve Analysis in Unconventional Reservoirs (**Graduated Fall 2016)**

Funded Research Projects

1. In-depth understanding of Development Challenges in Unconventional Shale Reservoirs (PI: Dr. Ahmadi, Co-I's: Dr. Hanks and **Dr. Awoleke**) Total: $441,373
2. Hydrocarbon Optimization Fund Prorated amount ($80,000)

PROFESSIONAL ACTIVITIES AND AFFILIATIONS

University Service

University
External reviewer for 8 doctoral preliminary exams and dissertation defenses

College of Engineering and Mines (CEM)
PETE representative on the PhD Admissions Committee (2014 -present)
PETE representative on the SLOA College Committee (2015-present)

Department of Petroleum Engineering (PETE)
Graduate coordinator (2015-present)
Faculty Search Committee (2016)

Public

Presentation at the North Pole High School Career Fair (May 2014)

Conference and Meeting Organization

Session Co-chair (Hydraulic Fracturing): 2015 SPE Western Regional Meeting, 27-30 April, 2015. Anaheim, CA, USA

Technical Committee Member: 2016 SPE Western Regional Meeting, 23-26 May, 2016. Anchorage, AK, USA

Session Chair/Co-chair (Data Analytics and Hydraulic Fracturing): 2016 SPE Western Regional Meeting, 23-26 May, 2016. Anchorage, AK, USA

Technical Reviewer/Editor

SPE Journal (*SPEJ*), SPE Reservoir Evaluation and Engineering (*SPEREE*), SPE Production and Operations (*SPEPO*), Journal of Unconventional Oil and Gas Resources (*JOUGR*) and *Fuel*

Affiliations

Society of Petroleum Engineers (SPE), Geothermal Resources Council (GRC)

PUBLICATIONS

Peer-Reviewed Journal Publications (* means Dr. Awoleke's students). All citations based on the SPE Style Guide

Approved

1. **Awoleke O. O.**, Zhu, D., and Hill, A.D. 2016. New Propped Fracture Conductivity Models for Tight Gas Sands. *SPE J*. SPE-179743-PA (in press; posted March 2016) http://dx.doi.org/10.2118/179743-PA

2. Dixit, N. C., Hanks, C. L., Wallace, W. K., Ahmadi, M., and **Awoleke, O.O.** 2016. In Situ Stress Variations Associated with Regional Changes in Tectonic Setting, Northeastern Brooks Range and Eastern North Slope of Alaska. **Accepted for publication with revisions**, May 2016.

3. Paryani, M., **Awoleke O. O.**, Ahmadi, M. and Hanks, C. 2016. Approximate Bayesian Computation for Probabilistic Decline Curve Analysis in Unconventional Reservoirs. *SPE Res Eval & Eng*. SPE-183650-PA. **Approved for publication**, July 2016.

4. Poludasu, S., **Awoleke, O.O.**, Ahmadi, M., and Hanks, C. 2016. Using Experimental Design and Response Surface Methodology to Model Induced Fracture Geometry in Shublik Shale. Journal of Unconventional Oil and Gas Resources *JUOGR* **15**: 43-55 http://dx.doi.org/10.1016/j.juogr.2016.04.002

5. Zanganeh, B., Ahmadi, M., Hanks, C., and **Awoleke, O.O.** 2015. The Role of Hydraulic Fracture Geometry and Conductivity Profile, Unpropped Zone Conductivity and Fracturing Fluid Flowback on Production Performance of Shale Oil Wells. Journal of Unconventional Oil and Gas Resources *JUOGR* **9**: 103-113 http://dx.doi.org/10.1016/j.juogr.2014.11.006

Submitted

1. **Awoleke O.O.,** Romero, J., Zhu, D., and Hill, A.D. 2016. Experimental Investigation of Propped Fracture Conductivity in Tight Gas Reservoirs Using Fractional Factorial Design. Submitted to *JUOGR*. **In review**

2. Dixit, N. C., Ahmadi, M., Hanks, C., and **Awoleke O.O.** 2016. Preliminary Study of the Carbon Sequestration and Enhanced Coal Bed Methane Production Potential of Sub-bituminous Coals of the Healy Creek Formation, Nenana basin, Interior Alaska. Submitted to *Natural Resources Research.* **In review**

3. Joshi, K., **Awoleke, O.O.,** Ahmadi, M. and Hanks, C. 2016. Uncertainty Quantification of Gas Production in the Barnett Shale using Time Series Analysis. Submitted to *Natural Resources Research*. **In review**

4. Narayan, A., **Awoleke, O.O.** and Liu, J. 2016. Synthetic Core Development for Petroleum Engineering Applications Using Aggregates and Clay. In preparation to be submitted to *Cement and Concrete Research.*

5. Nikam, A., **Awoleke, O.O.** and Ahmadi, M. 2016. A Methodical Investigation into the Interaction Between A Hydraulic Fracture and A Natural Fracture Using Three Dimensional Finite Element Analysis. Submitted to *Journal of Rock Mechanics and Mining Sciences*. **In review**.

Peer-Reviewed Conference Publications (* means Dr. Awoleke's students)

1. Narayan, A., **Awoleke, O. O.,** Ahmadi, M. and Liu, J. 2016. An Investigation into the Cold Heavy Oil Production with Sand Process Using Synthetic Cores and Designed Experiments. Presented at the SPE Western Regional Meeting, Anchorage, Alaska, 23-26 May. SPE-180373 http://dx.doi.org/10.2118/180373-MS

2. Nikam, A., **Awoleke, O. O.** and Ahmadi, M. 2016. Modeling the Interaction Between Natural and Hydraulic Fractures Using Three Dimensional Finite Element Analysis. Presented at the SPE Western Regional Meeting, Anchorage, Alaska, 23-26 May. SPE-180364 http://dx.doi.org/10.2118/180364-MS

3. Paryani, M., Ahmadi, M., **Awoleke, O.O.,** and Hanks, C. 2016. Using Improved Decline Curve Models for Production and Depletion Forecasts in Unconventional Reservoirs–Application to the

Eagle Ford Wells. Presented at the SPE Eastern Regional Meeting, South Canton, Ohio, 13-15 September. SPE-180364 http://dx.doi.org/10.2118/18xxxx-MS

4. Zanganeh, B., Ahmadi, M., Hanks, C. and **Awoleke, O.O.** 2014. Proper Inclusion of Hydraulic Fracture and Unpropped Zone Conductivity and Fracturing Fluid Flowback in Single Shale Oil Well Simulation. Presented at the SPE Western North American and Rocky Mountain Joint Meeting, Anchorage, Denver, Colorado, 17-18 April. SPE-169511 http://dx.doi.org/10.2118/169511-MS

Invited talks (* means Dr. Awoleke's students)

1. Awoleke, O.O. CHOPS and Research Opportunities through UAF. Technical Lecturer Luncheon, SPE Alaska Section, December 2013

Collaborators

Mohabbat Ahmadi (UAF); Cathy Hanks (UAF); Jenny Liu (UAF); Scott Goddard (UAF); Tathagata Ghosh (UAF); Ding Zhu and Dan Hill (Texas A&M)