

Felipe Perez

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EXPERIENCE

UNIVERSITY OF OKLAHOMA | GRADUATE RESEARCH AND TEACHING ASSISTANT

Aug. 2013 – Current | Norman, OK

- Current research in liquid-rich shales using molecular simulations to investigate the molecular signatures of enhanced oil recovery (EOR) and evaluate the efficiency of different recovery strategies at molecular scale.
- Preparation of material for Reservoir Engineering I and II.
- Use of molecular simulations to study swelling of layered clay minerals due to the presence of water.
- Write codes in Python, Fortran, Mathematica, and Matlab.

HESS CORPORATION | GEOPHYSICS INTERN

Sep. 2011 – Feb. 2012 | Houston, TX

- Estimate West Africa offshore assets.
- Seismic interpretation of turbidites and compartmentalized reservoirs using Petrel and Paradigm.
- Statistical analysis of well logs.
- Interpretation of facies and depositional environments.

UNIVERSITY OF SOUTH CAROLINA | LECTURER

Feb. 2011 – May 2011 | Bata, Equatorial Guinea

- Instructor at the National University of Equatorial Guinea (Guinea Equatorial Geoscience Project, managed by the University of South Carolina).

UNIVERSIDAD EAFIT | LECTURER

Sep. 2006 – Dec. 2008 | Medellin, Colombia

- Instructor (Physics I, II, and III, and Introduction to Physics).

UNIVERSIDAD DE ANTIOQUIA | LECTURER

Mar. 2006 – Apr. 2008 | Medellin, Colombia

- Instructor (Physics I and III).

UNIVERSIDAD NACIONAL DE COLOMBIA | LECTURER

Jan. 2005 – Dec. 2005 | Medellin, Colombia

- Instructor (Physics I and II).

RESEARCH

UNIVERSITY OF OKLAHOMA | GRADUATE RESEARCH ASSISTANT

Jun. 2016 – Present | Norman, OK

My current research work at the Mewbourne School of Petroleum and Geological Engineering is focused on unconventional reservoirs, particularly on liquid-rich shales. I investigate the phenomenology that inherently occurs in organic nanopores such as the suppression of critical properties of reservoir fluids, adsorption, diffusion, fluid fractionation, and fluid transport. I am interested in enhanced oil recovery in shales, exploring interactions between reservoir and injection fluids, and organic matter in shale rocks using molecular simulations. Injection includes environmental friendly solvents and designed microemulsion nanodroplets that modify the molecular forces between reservoir fluids and rocks. My work goes hand in hand with experimental studies in order to obtain a better understanding of the mechanisms that take place in unconventional reservoirs by which oil and natural gas are being produced today.

PUBLICATIONS

- Perez, F. and D. Devegowda (2019). Fluid flow towards microfractures during primary production from oil-rich shales. In preparation.
- Perez, F. and D. Devegowda (2019). A molecular dynamics study of soaking during enhanced oil recovery in shale organic pores. Submitted.
- Perez, F. and D. Devegowda (2019). Spatial distribution of reservoir fluids in mature kerogen using molecular simulations. Fuel 235, 448–459.
- Tinni, A., F. Perez, D. Devegowda, T. Truong, S. Dang, C. Sondergeld, and C. Rai (2018). In-situ fractionation in liquids-rich shales and its implications for EOR: Experimental verification and modeling study. In Unconventional Resources Technology Conference Proceedings. URTEC 2902946.

- Perez, F. and D. Devegowda (2017). Estimation of adsorbed-phase density of methane in realistic overmature kerogen models using molecular simulations for accurate gas in place calculations. Journal of Natural Gas Science and Engineering 46, 865–872.
- Jin, L., A. Jamili, L. Huang, and F. Perez (2017). Modeling the mechanisms of clay damage by molecular dynamic simulation. Geofluids vol. 2017, Article ID 1747068.

PRESENTATIONS

- Molecular signatures of enhanced oil recovery in shale organic pores. Second place at the Ahmed Ismail Poster Contest during the LAMMPS Workshop and Symposium. University of New Mexico, Albuquerque, NM. August 13–15, 2019.
- An unconventional approach to unconventional reservoirs. Finalist at Three Minute Thesis© Competition. The University of Oklahoma, Norman, OK. February 22, 2019.
- The use of molecular simulations to study shales. OU SPE Graduate Lunch and Learn. The University of Oklahoma, Norman, OK. September 12, 2018.
- The use of molecular simulations to construct and study organic pores and fluids present in shale reservoirs. APS March Meeting. Los Angeles, CA. March 5–9, 2018.
- Methane and carbon dioxide adsorption in kerogen models using molecular simulations. LAMMPS Workshop and Symposium. University of New Mexico, Albuquerque, NM. August 1–3, 2017.
- Estimation of adsorbed-phase density of methane in kerogen using molecular simulations. Second place at 2017 SPWLA International Student Paper Competition. Oklahoma City, OK. June 17–21, 2017.
- Adsorption of methane in kerogen models using molecular simulations. Second place at Graduate College's 2017 Student Research and Creativity Day. The University of Oklahoma, Norman, OK. February 24, 2017.

EDUCATION

UNIVERSITY OF OKLAHOMA | PHD. IN PETROLEUM ENGINEERING

Expected May 2020 | Norman, OK • Cum. GPA: 3.85 / 4.00

UNIVERSITY OF OKLAHOMA | MSc. IN PETROLEUM ENGINEERING

May 2016 | Norman, OK • Cum. GPA: 3.86 / 4.00

UNIVERSIDAD EAFIT | MSc. IN EARTH SCIENCES

Jun. 2011 | Medellin, Colombia • Cum. GPA: 4.32 / 5.00

UNIVERSIDAD NACIONAL DE COLOMBIA | BSc. IN ENGINEERING PHYSICS

Mar. 2005 | Medellin, Colombia • Cum. GPA: 4.20 / 5.00

TRAININGS

LAMMPS WORKSHOP AND SYMPOSIUM | UNIVERSITY OF NEW MEXICO

Aug. 13–15 2019 | Albuquerque, NM

LAMMPS WORKSHOP AND SYMPOSIUM | UNIVERSITY OF NEW MEXICO

Aug. 1–3 2017 | Albuquerque, NM

MOLECULAR DYNAMICS FOR MODERN MATERIALS WITH LAMMPS | TEMPLE UNIVERSITY

Aug. 15–18 2016 | Philadelphia, PA

WELL LOG INTERPRETATION | PETROSKILLS

Dec. 5–9 2011 | Katy, TX

BASIC RESERVOIR ENGINEERING | PETROSKILLS

Nov. 14–18 2011 | Katy, TX

SEISMIC INTERPRETATION | PETROSKILLS

Oct. 24–28 2011 | Katy, TX

STRUCTURAL INTERPRETATION IN PETROLEUM EXPLORATION AND DEVELOPMENT | NAUTILUS

Oct. 17–20 2011 | Houston, TX

PETREL 2012 INTRODUCTION G&G | SCHLUMBERGER

Oct. 10–14 2011 | Houston, TX

OVERVIEW OF THE PETROLEUM INDUSTRY | PETROSKILLS

Oct. 3–4 2011 | Katy, TX

BASIC PETROLEUM GEOLOGY FOR THE NON-GEOLOGIST | UNIVERSITY OF TULSA – CONTINUING
ENGINEERING AND SCIENCE EDUCATION
Aug. 9–11 2011 | Houston, TX

UNDERSTANDING SEISMIC ANISOTROPY IN EXPLORATION AND EXPLOITATION: HANDS ON |
SEG CONTINUING EDUCATION PROGRAM
Sep. 19–20 2010 | Houston, TX

SEISMIC INTERPRETATION AND DATA INTEGRATION | UNIVERSITY OF SOUTH CAROLINA – UNIVERSIDAD
EAFIT
Nov. 17–19 2009 | Medellin, Colombia

LANGUAGES

PROGRAMMING

Over 5000 lines:

Python • Fortran • Mathematica • Matlab • \LaTeX

SPOKEN & WRITTEN

Native fluency:

Spanish

High fluency:

English