Shaina Kelly, Ph.D.

Assistant Professor | Columbia University | Earth and Environmental Engineering

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Advancing transport in geologic porous media research to address the fundamental fluid storage and deliverability challenges facing sustainable subsurface energy, water, and decarbonization operations.

RESEARCH INTERESTS

Subjects:

- Transport phenomena in porous media (geologic and engineered materials)
- Multiphase fluid dynamics
- Interfacial phenomena, fluid-mineral interactions

Methods:

- Core/sample analysis laboratory techniques
- Optical and electron microscopy, image analysis
- Microfluidics and nanofluidics
- Computational fluid dynamics (CFD)

Applications:

- Carbon storage and mineralization
- Sustainable mining and oil and gas recovery
- Hydrogeology, contaminant transport
- Enhanced geothermal systems
- Hydrogen storage and geologic hydrogen

EDUCATION

The University of Texas at Austin, Austin, TX
Ph.D. in Petroleum and Geosystems Engineering, December 2015
M.S.E. in Petroleum and Geosystems Engineering
Co-Advisors: Dr. Carlos Torres-Verdín and Dr. Matthew Balhoff
GPA: 3.77/4.00

The University of Florida, Gainesville, FL
B.Sc. in Environmental Engineering, May 2011
Minor in Business Administration
GPA: 3.72/4.00

Selected coursework: Transport Phenomena, Fluid Flow and Heat Transfer (Chemical Engineering Dept.), Engineering Analysis, Advanced Thermodynamics and Phase Behavior, Advanced Petrophysics, Numerical Simulation of Reservoirs, Advanced Well Logging, Geological Concepts for Engineers, Advanced Reservoir Engineering, Advanced Production Engineering, Electron Microbeam Techniques, Environmental Physical Organic Chemistry, Public Health Engineering, Engineering a Sustainable Future, Water Chemistry, Surface Hydrology, Water/Wastewater Treatment, Wastewater Microbiology, Advanced Air Pollution Control Design

DISSERTATION

Topic: “Using nanofluidics and microscopy to study unconventional pore-scale transport phenomena”

Digital copy: https://repositories.lib.utexas.edu/handle/2152/33376

Summary: This work covers nanofluidic imbibition experiments in varied nanochannels and nano-networks, the fabrication of those devices, and corresponding methods that enable quantification of transport variables under nano-confinement. Phenomenological models were derived to scale the findings in terms of engineering variables such as effective pore diameter, viscosity and diffusivity for tight rock energy production and storage.

ACADEMIC AND TEACHING EXPERIENCE

APPOINTMENTS

Columbia University | New York, NY **July 2022-Present**
Assistant Professor, Earth and Environmental Engineering
Assistant Director, Lenfest Center for Sustainable Energy, Columbia University Climate School

Established Kelly Lab (PoreStore), which investigates and optimizes the interplay between transport phenomena and fluid-rock interactions in geologic and engineered porous media for sustainable subsurface energy, water, and decarbonization operations.

Director of the Masters of Science in Carbon Management (MCM) program (Sept. 2023-present)

TEACHING

Hydrosystems Engineering, CIEEE 3250 / 4250 (Spring 2023, 2024)

Carbon Storage, EAEE 4301 (Fall 2023)

ADVISEES

PhD Students: Tianxiao Shen (Fall 2022-present), Rosalie Krasnoff (Spring 2023-present), Olivia Terry (Fall 2023-present), Piyush Pradhan (Spring 2024-present; *co-advisor*: Pierre Gentine).

Postdoctoral Fellows: Zuhao Kou (Summer 2023-present)

Selected MS Students (research credit option): Kyann Hadife (Summer 2023), Piyush Pradham (Summer 2023-present), Zoya Husain (Spring 2023), Lucas Guy Abernathy (Fall 2023-present), Janna Talyzina (Fall 2023-present)

Undergraduate Researchers: Sahchit Chundar (Fall 2022-present), Lydia Futrell (Spring 2023-present), Johnny Lee (Summer 2023-present), Megan Trapanese (Summer 2023, SURE program)

PROFESSIONAL EXPERIENCE

Industry Research & Development

AquaNRG Consulting Inc. | Houston, TX **March 2021-June 2022**
Senior Geoscience Engineer – Environmental and Energy Technology

Responsible for advancing the engineering and business functionality of reactive transport modeling technologies for oil & gas, CCS, geothermal, hydrogen storage, mining, and nuclear waste storage clients.

- Designed product validation tests and client-facing case studies for AquaNRG's aiRock, a cloud-based simulation platform supported by $1.4MM in Department of Energy (DOE) and National Science Foundation (NSF) awards. Guided 2 developers (Agile sprints) and built 3 end-user applications.
- Innovated CCS storage diagnostics by streamlining 2 state-of-the-art, open-source modeling tools (Lattice Boltzmann Porous Media, OpenFOAM) to quantify CO_2 trapping mechanisms.
- Coordinated (Principal Investigator) a $3MM Enhanced Geothermal Systems DOE Funding Opportunity Announcement technical proposal with industry and academic partners.

ConocoPhillips Company | Houston, TX **January 2018 - March 2021**
Senior Petrophysicist – Geoscience

Delivered special core analysis (SCAL) subject matter expertise, petrophysical models, technology development, and advanced numerical modeling to global Exploration & Production business units (BUs).

- Consulted BUs on sample analysis programs for multi-$MM coring operations (L48, Alaska, North Sea, Africa), enabling assessment of revenue-determining reservoir storage and deliverability properties.
- Evaluated reservoir properties for 10+ global assets, conventional and unconventional and sedimentary to volcanic lithologies (L48, Alaska, Canada, South America), by synthesizing multi-scale core and well log data of varied vintage. Integrated results with reservoir engineers, geologists, etc. to advise BU managers.
- Led 8 interdisciplinary geoscientists in a multi-year "digital twin" Technology Development project that simulated fluid flow data for cost-prohibitive or complex/unattainable core analysis scenarios. Achieved 3 BU adoptions (Eagle Ford, Malaysia, Alaska) with strategic management of a $250k/year budget.
- Directed 4+ Fracture Fluid-Rock Interaction investigations (laboratory and modeling) to diagnose the impacts of chemical additives and injection strategy on production improvement in marginal wells. Results prompted mineral scale mitigation programs in 3 major assets (Eagle Ford, Niobrara, Montney).
- Organized 10+ vendor partnerships with Contacts, Intellectual Property, and Supply Chain teams. Authored/presented at least 1 technical conference paper per year and co-authored 2 patents.

ConocoPhillips Company | Houston, TX **January 2016 - January 2018**
Petrophysicist – Applied Geoscience

Responsible for determining reservoir properties via logging program design, petrophysical models, and core analysis. Consulted on special topics including enhanced oil recovery, pore-filling bitumen, and sand control.

- Oversaw 7 multi-$MM Arctic logging and coring operations for Alaska Exploration, enabling real-time go/no-go data acquisition decisions through on-site analysis of logging while drilling and wireline data.
- Provided drilling operations support and petrophysical evaluations to Exploration stakeholders for 4+ wells/basins, including offshore Gulf of Mexico and Nova Scotia prospects.
- Built BU partnerships to reduce asset storage uncertainty with Reservoir Quality imaging technologies. Developed and integrated those workflows with Permian and Eagle Ford core analysis programs.

ConocoPhillips Company | Houston, TX **Summer 2013, 2014**
Petrophysical Technology Intern – Geoscience & Reservoir Engineering

Analyzed the technology readiness level of computation fluid dynamics predictions of tight rock (shale) permeability. Published findings (*Advances in Water Resources*) have received >250 citations. Benchmarked a new gamma ray spectroscopy logging tool in the Eagle Ford and recommended tool use cases to the Technology and business unit teams.

South Florida Water Management District | West Palm Beach, FL **Summer 2009, 2010**
Everglades Restoration & Capital Projects Intern – Engineering Services

Improved engineering guideline drawings (AutoCAD), written specifications, and statements of work for Everglades restoration and hydraulic control projects. Evaluated and proposed solutions for related operational issues including sulfur and microbial attack on concrete water control structures.

OTHER ACADEMIC EXPERIENCE

The University of Texas at Austin | Austin, TX **August 2011 - December 2015**
Graduate Research Assistant – **Department of Petroleum and Geosystems Engineering**

Established nanofluidic (lab-on-a-chip) experiments to investigate fluid flow dynamics in tight porous media systems. Synthesized findings for the shale revolution and carbon sequestration applications.

- Authored 5 peer-reviewed publications in high-impact factor journals including *Langmuir* and *Nanoscale* and presented findings at 4+ major technical conferences and seminars.

- Mentored 4 undergraduate research assistant interns and 1 postdoctoral researcher.

University of Florida | Gainesville, FL **January 2009 - April 2011**
Content Tutor – Academic Technology Teaching Center

Tutored Calculus I-III, Differential Equations, and Physics I & II in individual, group, and live television tutoring sessions, including a tutoring assignment with the University of Florida's Navy ROTC (10 hours per week). Also tutored University of Florida student-athletes in individual sessions at the University Athletic Association (5 hours per week).

PEER-REVIEWED PUBLICATIONS

h-index: 12 | i10index: 16 (GoogleScholar metrics)

Fluid-Rock Interactions / Transport in Porous Media

Shen, Tianxiao and **Kelly, S.,** "Towards Enhanced Fluid-Rock Interactions for Carbon Storage: Mapping the interplay between wettability, alteration, and petrophysical properties", *in preparation.*

Terry, O., Caro, D., Dewey, J., Kaszuba, J., **Kelly, S.,** "Integrative Analysis of Fluid-Rock Interactions and Fluid Invasion in Nanoporous, Carbonate-Rich Reservoir Rock", *in preparation.*

Terry, O., Caro, D., **Kelly, S.**, Dewey, J., Kaszuba, J. "Fracture Fluid Reactions and Invasion during Well Shut In: A Multiscale Study in the Niobrara Formation, Denver-Julesburg Basin, Colorado, USA", *in preparation.*

Watt, E. A., Laycock, D. P., Michael, E., Tobin, R. C., **Kelly, S.**, Johnston, M. N. (2022), "Hydrocarbon charge and petroleum system evolution of the Montney Formation: A multidisciplinary case study of the Blueberry sub-play in Northeast British Columbia, Canada", *Bulletin of Canadian Energy Geoscience*, 69 (1), 21-50. (*This paper was awarded the Medal of Merit by the Canadian Energy Geoscience Association, 2024*)

Jiang, T., Bonnie, R.J.M., Simoes Correa, T., Krueger, M. C., **Kelly, S. A.**, Wasson, M. S. (2022). "Integrated Reservoir Characterization Using Unsupervised Learning on Nuclear Magnetic Resonance (NMR) T1-T2 Logs", *Petrophysics*, 63 (03), 277-289.

Dick, M.J., Veselinovic, D., Bonnie, R.J.M., **Kelly, S.** (2022). "NMR-Based Wettability Index for Unconventional Rocks", *Petrophysics*, 63 (03), 418-441.

Applied Microfluidics

Mehmani, A., **Kelly, S.**, Torres-Verdín, C. (2020). "Review of micro/nanofluidic insights on fluid transport controls in tight rocks", *Petrophysics*, 60 (06): 872–890.

Du, Y., Mehmani, A., Xu, K., **Kelly, S.**, Balhoff, M. T., Torres-Verdín, C. (2020). "Microfluidic diagnostics of the impact of local microfracture connectivity on hydrocarbon recovery following water injection", *Water Resources Research*, 56 (7), https://doi.org/10.1029/2019WR026944.

Mehmani, A., **Kelly, S.**, Torres-Verdín, C., Balhoff, M. T. (2019) "Capillary trapping following imbibition in porous media: Microfluidic quantification of the impact of pore-scale surface roughness". *Water Resources Research*, 55 (11), 9905-9925.

Mehmani, A., **Kelly, S.**, Torres-Verdín, C., Balhoff, M. T. (2019) "Residual oil saturation following gas injection in sandstones: Microfluidic quantification of the impact of pore-scale surface roughness", *Fuel*, 251, 147-161.

Nanofluidics

Kelly, S., Torres-Verdín C., Balhoff, M.T. (2018). "Influences of polarity and hydration cycles on imbibition hysteresis in silica nanochannels", *Physical Chemistry Chemical Physics*, 20 (1), 456-466.

Kelly, S., Balhoff, M.T., Torres-Verdín, C. (2016) "Subsurface to substrate: dual-scale micro/nanofluidic networks for investigating transport anomalies in tight porous media", *Lab on a Chip*, 16 (15), 2829-2839. (*Featured in the themed collection "Lab on a Chip Recent Hot Articles")*

Kelly, S., Balhoff, M. T., Torres-Verdín, C. (2016). "Anomalous liquid imbibition at the nanoscale: the critical role of interfacial deformations", *Nanoscale*, 8 (5), 2751-2767.

Kelly, S., Balhoff, M. T., Torres-Verdín, C. (2015). "Quantification of Bulk Solution Limits for Liquid and Interfacial Transport in Nanoconfinements", *Langmuir*, 31 (7), 2167-2179.

Computational Fluid Dynamics (Porous Media)

Mehmani, A.*, **Kelly, S.***, Torres-Verdín, C. (2020). "Leveraging digital rock physics workflows in unconventional petrophysics: A review of opportunities, challenges, and benchmarking", *Journal of Petroleum Science and Engineering*, 190, https://doi.org/10.1016/j.petrol.2020.107083. (*S.K. and A.M. are co-first authors)

Kelly, S. A., El-Sobky, H., Torres-Verdín, C., Balhoff, M. T. (2016). "Assessing the Utility of FIB-SEM Images for Shale Digital Rock Physics", *Advances in Water Resources,* Pore scale modeling and experiments (special issue), 95, 302-316. (>250 citations)

Shabro, V., **Kelly, S**., Torres-Verdín, C., Sepehrnoori, K. , Revil, A. (2014). "Pore-scale modeling of electric resistivity and permeability in FIB-SEM images of organic mudrock", *Geophysics*, 79 (5), D289-D299. (*Honorable Mention in the Best Paper category for the Society of Exploration Geophysicists' (SEG) 2015 Honors and Awards*)

SELECTED CONFERENCE PAPERS & TALKS

Note: corresponding conference presentation given by first author

Conference Talks:

Shen, T., **Kelly, S.**, Cao, R., Schaef, T., "Predictive Multiphase Flow Models for Linking Pore-scale Accessible Reactive Mineral Surface Area to Field Carbon Mineralization Capacity in Basalts", American Geophysical Union (AGU), December 2023

Shen, T. and **Kelly, S.**, "Multiscale forward modeling on carbonate precipitation in porous media during geological carbon sequestration", InterPore2023, Edinburgh, Scotland, May 22 - 25, 2023.

Conference Talks with Paper:

Kelly, S., Dick, M.J., Veselinovic, D. (2023). "Using NMR to Quantify Mineralization-Induced Porosity Changes in Varied Lithologies: IOR and Carbon Storage Applications", 2023 SPE/AAPG/SEG Unconventional Resources Technology Conference (URTeC), Denver, CO.

Kelly, S., Bonnie, R.J.M., Dick, M.J., Veselinovic, D. (2021). "NMR Wettability Index Measurements and Methods Compared on a Variety of Unconventional Samples", SPWLA 62nd Annual Logging Symposium, Virtual Conference.

Laycock, D., Watt, E., Tobin, R., **Kelly, S.**, Johnston, M., Michael, E. (2021). "Examining the origins and yield impact of a stratified oil column in the Montney Formation, NE BC", 2021 SPE/AAPG/SEG Unconventional Resources Technology Conference (URTeC), Houston, TX.

Kelly, S., Bonnie, R.J.M., Dick, M.J., Veselinovic, D. (2020). "NMR Time-Lapse Wettability Assessments in Unconventionals: Insights from Imbibition", 2020 SPE/AAPG/SEG Unconventional Resources Technology Conference (URTeC), Virtual Conference.

Kelly, S., Johnston, M., Lee, B., San Martin, R. (2019). “Kerogen-Bitumen-Porosity Nexus: Insights from Multi-Basinal Collocated SEM-Optical Light Petrography”, 2019 SPE/AAPG/SEG Unconventional Resources Technology Conference (URTeC), Denver, CO.

Reynolds, A. C., **Kelly, S. A**., Bonnie, R.J.M., Howard, J. J., Krumm, R. L. (2018) “Quantifying Nanoporosity: Insights Revealed by Parallel and Multiscale Analyses”, 2018 SPE/AAPG/SEG Unconventional Resources Technology Conference (URTeC), Houston, TX.

Kelly, S., Torres-Verdín, C., Balhoff, M. T. (2015). “Shale Fluid Transport in Nano-Scale Networks: The Competing Roles of Fluid Properties, Interfaces and Network Geometry”, 2015 SPE/AAPG/SEG Unconventional Resources Technology Conference (URTeC), San Antonio, TX.

Kelly, S. (2013). “Experimental Investigation of the Influence of Molecular Surface Interactions on Imbibition in Shale Nano-Pore Proxies”, Society of Petroleum Engineers Student Paper, 2013 SPE Annual Technical Conference and Exhibition, New Orleans, LA.

PATENTS

Krueger, M. C., **Kelly, S. A.**, Michael, G. E., “Inert fluid assays for sealed core recovery”, US Patent App. 17/888,089 (patent publication date: 2023)

Krueger, M. C., **Kelly, S. A.**, Michael, G. E., Simoes Correa, T. B., “High pressure core chamber and experimental vessel”, US Patent App. 17348883 (patent publication date: 2021).

AWARDS AND HONORS

GRANTS

Lead PI:

Awardee, Carbontech Development Initiative (CDI), New Directions Program, “Waste-derived “Goldilocks” cement microstructures for co-enhancement of CO2 mineralization and composite strength”, award duration: September 2024 - September 2025, co-PIs: Shiho Kawasima, Thanos Boursalas.

Awardee, Columbia University Qiu Zhong Wei Research Projects, “Towards sustainable recovery in deep hard rock critical minerals deposits”, award duration: October 2023-September 2024, co-PIs: D.R. Nagaraj, Raymond Farinato.

Awardee, Columbia University SEAS Interdisciplinary Research Seed (SIRS) Funding, “Engineered Rocks: Lab-on-a-chip studies of geologic CO_2 storage mechanisms”, award duration: July 2023-July 2024, co-PIs: Peter Kelemen, Marc Spiegelman.

Awardee, American Chemical Society (ACS) Petroleum Research Fund, "Influence of Pore-Confinement on Water-Oil Microemulsion Structures and Transport Properties", PRF# 66777-DNI9, award duration: July 2023 - August 2025.

Awardee, Climate School Seed Funding, 2023 Seed Funding competition, “Optimizing Rock CO2 Storage Capacity: Tools for Porous Media Characterization”, Summer 2023, award duration: July 2023 - June 2024, co-PI: Peter Kelemen.

Awardee, Provost’s Grants Program for Junior Faculty who Contribute to the Diversity Goals of the University, “PoreStore Lab: Optimizing Geologic Carbon Storage Capacity with Pore-Scale Fluid Flow Dynamics”, award duration: January 2023 - December 2023.

Nominee, 2023 J&J WiSTEM2D program - Engineering Track, Columbia Limited Submissions.

Awardee, Bonomi Scholar (1) and Dean's Office positions (2), SEAS Dean's Office Funding Allocations, Summer 2023.

SELECTED HONORS

DOE ARPA-E Inspiring Generations of New Innovators to Impact Technologies in Energy (IGNIITE) Finalist, Washington, DC, 2024.

2022-23 Young Professional Technical Award, Society of Petrophysicists and Well Log Analysts (SPWLA), 64th SPWLA Annual Symposium, Conroe, TX, June 2023.

ConocoPhillips *"Shark Tank"* Winner, CTO-sponsored pitch (technology name: "NanoAtlas") at 2019 ConocoPhillips Analytics & Innovation Symposium.

International Student Paper Contest Winner, 2013 Society of Petroleum Engineers (SPE) Annual Technical Conference and Exhibition, Masters Division.

Energy Challenge International First Place Winner, Air & Waste Management Association (AWMA) 2011 National Conference, Orlando, FL. (topic: renewable energy portfolio plan)

College of Engineering Female Speaker Award (*Commencement Speaker*), University of Florida Spring 2011 Commencement Ceremony.

Academic Fellowships and Scholarships (2007-2015):

Recipient, Statoil (Equinor) Fellows Program at The University of Texas at Austin (2015).

Recipient, Cockrell School of Engineering at The University of Texas at Austin Thrust 2000 Fellowship (2011-2015).

Recipient, National Science Foundation Graduate Research Fellowship Program Honorable Mention (2012).

Recipient, P.M. Pope Engineering Scholarship, University of Florida College of Engineering (2010).

Recipient, Environmental Engineering Alumni Scholarship, University of Florida College of Engineering (2009).

Recipient, CH2M Hill University of Florida College of Engineering Scholarship (2008).

Recipient, The College Board's 'Young Epidemiology Scholars' Competition Scholarship (2007).

Recipient, Florida High School Athletic Association Academic All-State Team Scholarship (2007).

Recipient, Florida Bright Futures Academic Scholarship (2007-2011).

ADVISEE AWARDS AND HONORS

Tianxiao Shen (EEE PhD student, Fall 2022-present)

Best Poster Presentation award, 2023 Earth and Environmental Engineering Graduate Student Symposium, "Multiscale forward modeling on carbonate precipitation in porous media during the early stage of geological carbon sequestration", (January 2023).

Rosalie Krasnoff (EEE PhD student, Summer 2023-present)

Selected Participant, Department of Energy Research Experience in Carbon Sequestration (RECS) 2023 cohort and program, July 16-25, 2023 in Colorado, Wyoming and the Black Hills of South Dakota.

Olivia Terry (*incoming Fall 2023 PhD student*)

Awardee, Columbia University Provost Diversity Fellowship, Fall 2023.

Sahchit Chundar (EES undergraduate researcher, Fall 2022-present)

Intern, Battelle Memorial Institute, CCUS group, Columbus, OH, Summer 2023.

PROFESSIONAL ACTIVITIES

SELECTED INVITED TALKS AND PANELS

Invited Participant, PNNL Subsurface Mineralization Working Group meeting, Washington, DC,, January 23, 2024.

Workshop Panelist, National Academies, *Atmospheric Methane Removal: Needs, Challenges, and Opportunities* workshop (development of a research agenda), “Synergies with carbon storage and mineralization technologies” (lightning talk), October 17-18, 2023, Washington, DC.

Seminar, Bureau of Economic Geology (BEG), “Predictive multiphase flow assessments of the impacts of fluid-mineral interactions during CO_2 and H_2 storage”. Presented September 2023.

Seminar, Princeton University, SMatCH (Soft Materials Coffee Hour), “Submicron to Subsurface Characterization: Transport Phenomena in Porous Media for Sustainable Energy Applications”, Host: Complex Fluids Group, Mechanical and Aerospace Engineering. Presented May 2023.

Seminar, Kansas State University, Department of Geology, “Submicron to Subsurface Characterization: Transport Phenomena in Porous Media for Sustainable Energy Applications”, Presented April 2023.

Guest lecture, Columbia EEE’s *Carbon Utilization and Conversion* course; Lecture topic “Carbon Storage: Submicron to Subsurface”, Presented April 2023.

Seminar, Engineers Without Borders, Earth Day Environmental Hackathon event, Topic: “Submicron to Subsurface Carbon Storage: Transport Phenomena in Porous Media”, Presented April 2023.

Guest lecture, Columbia EEE’s *A Better Planet by Design* course; Lecture topic “Submicron to Subsurface Characterization: Transport Phenomena in Porous Media for Sustainable Energy Applications”, Presented Oct. 2022.

Seminar, “*Technical Opportunities for Subsurface Scientists and Engineers in the Energy Transition*”, AAPG/SPE/RMAG Rocky Mountain Members in Transition (MiT), Presented September 2021.
(Recorded talk: https://www.rmag.org/index.php?src=gendocs&ref=RockiesMembersinTransition#sept9)

Seminar, “*Leveraging Digital Rock Physics: Opportunities and Pitfalls*”, ConocoPhillips Petrophysics Network Meeting, Presented December 2018.

Seminar, “*Nanofluidics, Phenomenological Models, and Implications for Tight Rocks*,” Bureau of Economic Geology, The University of Texas at Austin, Presented October 2015.

SELECTED SERVICE

Columbia University & Earth and Environmental Engineering (EEE) Department:

Assistant Director, Lenfest Center for Sustainable Energy, Columbia University Climate School (Fall 2023 - present)

Director of the Masters of Science in Carbon Management (MCM) program (Fall 2023-present)

Diversity, Equity, and Inclusion Committee (Fall 2022 - present)

Graduate Admissions Committee (Spring 2023 - present); 2023 PhD Open House organizer

EEE Faculty Meeting Minutes (Fall 2022 - present)

Search Committee Member, 2023 Open Rank Faculty Position in the Area of Sustainable Minerals, Metals and Materials (S3M) in the Department of Earth and Environmental Engineering

Search Committee Member, 2023 Junior Faculty Position in the Department of Earth and Environmental Engineering, Carbon Capture and Conversion

Conferences, Reviewer Roles, and External Committees:

Session Committee Member, Fluids in Nanoporous Media, Interpore 2024, Qingdao, China.

Session Convener, American Geophysical Union (AGU) Fall 2023 conference. Session (Hydrology): H125. Technical Advances in Carbon Capture, Utilization, and Storage (CCUS), San Francisco, CA.

Session Chair, Theme: *Oil/Gas/Water: Fluid-Fluid, Fluid-Rock Interactions and Chemostratigraphy I*, 2019 Unconventional Resources Technology Conference (URTeC), Denver, CO.

Session Chair, Theme: *Deep Sensing Borehole Acoustics*, 2017 Society of Exploration Geophysicists (SEG) conference, Houston, TX.

Session Chair, Theme: *Meso-, Micro-, and Nano-Scale Imaging of Unconventional Reservoirs*, 2016 Unconventional Resources Technology Conference (URTeC), San Antonio, TX.

Student Paper Contest Judge, 2016 Society of Petroleum Engineers (SPE) Southwest Regional Student Paper Contest, Masters Division, Austin, TX.

Manuscript Reviewer: *Proceedings of the National Academy* (PNAS), *Langmuir* (ACS), *The Journal of Unconventional Oil and Gas Resources* (Elsevier), *Fuel* (Elsevier), *American Association of Petroleum Geologists (AAPG) Bulletin*, *Marine and Petroleum Geology* (Elsevier), *Transport in Porous Media* (Springer), *Computational Geosciences* (Springer), *Journal of Petroleum Science and Engineering* (Elsevier), *Reservoir Evaluation & Engineering* (SPE), *Petrophysics* (Society of Petrophysicists and Well Log Analysts).

PROFESSIONAL MEMBERSHIPS

American Geophysical Union (AGU)
Interpore - International Society for Porous Media
American Chemical Society (ACS), Energy & Fuels Division
Society of Petrophysicists and Well Log Analysts (SPWLA)
Society of Petroleum Engineers (SPE)
Society of Exploration Geophysicists (SEG)

Columbia Climate School - Lenfest Center for Sustainable Energy

SELECTED TRAINING

Research Leadership Training, AtKissonTraining Group, sponsored by Columbia Climate School, Spring 2023.

ConocoPhillips Engineering and Geoscience Academy new hire training programs (2016-2018), including courses in structural geology, sedimentology/stratigraphy, seismic analysis, petrography, and risk assessment.

TOUGH REACT Short Course, Lawrence Berkeley National Lab, Berkeley, CA, 2018.

ConocoPhillips *Western Interior Seaway* Depositional Settings field trip, Green River, UT, 2019.

ConocoPhillips *Structural Geomechanics* field trip, Guadalupe and Big Bend National Parks, TX, 2017.

"Ask the Better Question" Meeting Facilitation Workshops, instructor: Katherine Rosback, ConocoPhillips, 2018.

Passed the NCEES Fundamentals of Engineering (FE) Exam (2011)

OTHER

Extracurricular: Runner, cyclist, and triathlete (11 marathons, 1 Ironman 70.3)

Citizenship: United States