

Qingwang (Kevin) Yuan, Ph.D.

Assistant Professor, Department of Petroleum Engineering, Texas Tech University

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Research Interests

- In-situ hydrogen generation and production from oil and gas reservoirs using in-situ combustion gasification and microwave-assisted catalytic heating technologies
- Experimental and numerical modeling of single and multiphase flows in subsurface porous media
- Modeling of methane leakage from orphaned wells
- Enhanced oil recovery techniques: CO₂ flooding, solvent injection, water flooding, SAGD, VAPEX
- Uncertainty analysis in basin and petroleum systems modeling

Professional Work Experience

- **Assistant Professor**
Bob L. Herd Department of Petroleum Engineering, Texas Tech University, USA 01/2020 – Present
- **Postdoctoral Fellow**
Stanford University, USA 12/2017 – 12/2019
Supervisors: Dr. Hamdi Tchelepi and Dr. Alan Burnham
Established mechanism-based uncertainty analysis for basin and petroleum systems modeling
- **Postdoctoral Fellow, Mitacs Elevate Program**
University of Regina, Saskatchewan Research Council, Canada 04/2016 – 11/2017
Supervisors: Dr. Fanhua (Bill) Zeng and Kelly D. Knorr
Investigated single/multiphase flow in subsurface porous media, examined PVT properties of foamy oil using heavy oil-methane system in a bulk phase, investigated SAGD performance and CO₂ huff-n-puff

Education

- **Ph.D., Petroleum Engineering** – University of Calgary, Calgary, AB, Canada 2014
Dissertation Title: Miscible Cyclic Time-Dependent Displacements in Porous Media
Electronic Thesis URL: <http://theses.ucalgary.ca/handle/11023/1937>
Supervisor: Dr. Jalel Azaiez
- **M.Sc., Oil and Gas Production Engineering** – China University of Petroleum (East China), 2010
Dissertation Title: Research and Optimization of the Offshore Oil Production System
- **B.Sc., Petroleum Engineering** (major) – China University of Petroleum (East China), 2007
- **B.B.A., Business Administration** (minor) – China University of Petroleum (East China), 2007

Teaching Experience

- **Students Supervised**
PhD students:
Ping Song, 08/2020 – Present
Keju Yan, 08/2021 – Present
Baizheng An, 01/2022 – Present
Master students:
Baizheng An, 02/2020 – 12/2021
Aboubakar Mahamadene, 10/2021 – Present

Undergraduate students:

Daniel Solorzano (awarded McNair Scholar, 06/2020), 01/2020 – Present

Anton Kaiser (awarded SPE Permian Basin Scholarship, 05/2021; TrUE Scholarship at TTU, 05/2021), 11/2020 – Present

- **Lecturer**, Texas Tech University, USA
 - ✓ PETR 5307 – *Enhanced Oil Recovery*, Spring 2020, 2021
 - ✓ PETR 4324 – *Statistical Analysis of Data*, Fall 2020, 2021
- **Teaching Assistant**, University of Regina, Canada
 - ✓ Taught 1/3 of the course ENPE 470 *Reservoir Modeling*, Fall 2016
 - ✓ Worked as a committee member in the defense of 2 M.Sc. students
 - ✓ Mentored master and PhD students on manuscript and thesis writing
- **Teaching Assistant**, University of Calgary, Canada, 09/2011 – 10/2014
 - ✓ Passionately tutored a graduate student on a project *Cyclic Steam Stimulation*
 - ✓ Supervised undergraduate students' lab and tutorials; marked assignments, reports and quizzes: ENGG 201: Behaviour of Liquids, Gases and Solids; ENCH 331: Process Fluid Dynamics

Honors and Awards

1. Interpore – PoreLab Award for Young Researchers, International Society for Porous Media 2018
2. Mitacs Award for Outstanding Innovation – Postdoctoral (highlighted by the Honourable Navdeep Bains, Minister of Innovation, Science and Economic Development, the Honourable Kirsty Duncan, Minister of Science, the Honourable Herb Cox, Minister of Advanced Education of Government of Saskatchewan, and David Malloy, the vice president of the University of Regina) 2017
3. Best Paper Award in the 2nd International Conference on Heat Transfer and Fluid Flow 2015
4. Department of Chemical & Petroleum Engineering Graduate Award, University of Calgary 2014
5. Chemical & Petroleum Engineering Graduate Excellence Scholarship, University of Calgary 2014
6. Chemical & Petroleum Engineering Graduate Excellence Scholarship, University of Calgary 2013
7. Dr. Roger Butler Memorial Graduate Scholarship, University of Calgary 2012
8. Research sponsored by NSERC Discovery Grant, University of Calgary 2010-2014

Interviews and Media Relations

1. InterPore – PoreLab Award for Young Researchers, InterPore homepage, 2018. Link: <https://www.interpore.org/awards/fraunhofer-award-for-young-researchers-awardees/#1605117578064-c7388011-77ef>.
2. “Up-and-coming researchers honoured for breakthrough discoveries at 7th annual Mitacs Awards”, Mitacs, 2017. Link: <https://www.mitacs.ca/en/newsroom/news-release/and-coming-researchers-honoured-breakthrough-discoveries-7th-annual-mitacs>.
3. “How Mentorships can be Mutually Beneficial for Industry and Academia”, Saskatchewan Research Council (SRC), 2017. Link: <http://www.src.sk.ca/blog/how-mentorships-can-be-mutually-beneficial-industry-and-academia>.
4. “URegina research wins national award for heavy oil research”, CBC Global News Regina, 2017. Link: <https://www.mitacs.ca/en/newsroom/media-coverage/global-news-regina-uregina-research-wins-national-award-heavy-oil-research>.
5. “Government of Saskatchewan supports research internships for graduate students”, The Government of Saskatchewan, 2017. Link: <https://www.saskatchewan.ca/government/news-and-media/2017/november/30/mitacs>.

6. "Computer model may lead to greater heavy oil recovery and reduce environmental impact", University of Regina, 2017. Link: <https://www.uregina.ca/external/communications/feature-stories/current/2017/11-231.html>.
7. "U of R researcher's computer model allows producers to 'see' solvent-oil front in the reservoir", JWN Energy, 2017. Link: <http://www.jwnenergy.com/article/2017/11/university-regina-researchers-computer-model-allows-producers-see-solvent-oil-front-reservoir/>.

Research Funding

1. Principal investigator, Experimental and mathematical modeling of flow instability in oil recovery
Funding: **\$110,000**; 2-year; Industrial partner: Saskatchewan Research Council, SK, 2016
2. Co-investigator, Fingering instabilities of multi-phase multi-component flows in porous media
Funding: **\$25,000**; 2-year; Funded by Discovery Grant, NSERC, 2013
3. Major investigator, Optimization of the offshore oil production system (National Key Project)
Funding: **\$100,000**; 3-year; Industrial partner: CNOOC Research Institute, China, 2007

Patent

- **Qingwang Yuan**, Bo Ren, In-Situ Hydrogen Generation and Production from Petroleum Reservoirs, filed in September 2021.
- Xiangzeng Wang, Fanhua Zeng, Feng Shen, **Qingwang Yuan**, Jinqiao Wu, Methods for Performing Fracturing and Enhanced Oil Recovery in Tight Oil Reservoirs (Canadian Patent Application No. 3,000,260, Chinese Patent Application No. 201810235536.X)

Selected Publications

Peer-Reviewed Journal Articles Published

1. **Qingwang Yuan**, Zhiwei Ma, Jinjie Wang, and Xiang Zhou, "Influences of Dead-end Pores in Porous Media on Viscous Fingering Instabilities and Cleanup of NAPLs in Miscible Displacements", *Water Resources Research*, 2021, <https://doi.org/10.1029/2021WR030594>.
2. **Qingwang Yuan**, Yashar Mehmani, Alan Burnham, Alexandre Lapene, Johannes Wendebourg, Hamdi Tchepeli, "Scaling Analysis of Coupled Compaction, Kerogen Conversion, and Petroleum Expulsion for Primary Migration", *Journal of Petroleum Science and Engineering*, Vol. 192, 107285, 2020.
3. **Qingwang Yuan**, Xiang Zhou, Jinjie Wang, Fanhua Zeng, Kelly Knorr, Muhammad Imran, "Control of Viscous Fingering and Mixing of Miscible Displacements with Time-Dependent Rates", *AIChE Journal*, Vol. 65, No. 1, pp. 360-371, 2019.
4. **Qingwang Yuan**, Xiang Zhou, Fanhua Zeng, Kelly Knorr, Muhammad Imran, "Nonlinear Numerical Simulations of Miscible Displacements with Concentration-Dependent Diffusion in Porous Media", *Chemical Engineering Science*, Vol. 172, No. 23, pp. 528-544, 2017.
5. **Qingwang Yuan**, Shanshan Yao, Xiang Zhou, Fanhua Zeng, Kelly Knorr, Muhammad Imran, "Miscible Displacements with Concentration-Dependent Diffusion and Velocity-Induced Dispersion in Porous Media", *Journal of Petroleum Science and Engineering*, Vol. 159, pp. 344-359, 2017.
6. **Qingwang Yuan**, Xiang Zhou, Fanhua Zeng, Kelly Knorr, Muhammad Imran, "Investigation of Concentration-Dependent Diffusion on Frontal Instabilities and Mass Transfer in Homogeneous Porous Media", *The Canadian Journal of Chemical Engineering*, Vol. 96, pp. 323-338, 2017, **featured articles in the "Issue Highlights"**.
7. **Qingwang Yuan**, Jalel Azaiez, "Inertial Effects in Cyclic Time-Dependent Displacement Flows in Homogeneous Porous Media", *The Canadian Journal of Chemical Engineering*, Vol. 93, No. 8, 2015.

8. **Qingwang Yuan**, Jalel Azaiez, "Inertial Effects of Miscible Viscous Fingering in a Hele-Shaw Cell", *Flow Dynamics Research*, Vol. 27, No. 1, 015506, 2015.
9. **Qingwang Yuan**, Jalel Azaiez, "Miscible Displacements in Porous Media with Time-Dependent Injection Velocities", *Transport in Porous Media*, Vol. 104, No. 1, pp. 57-76, 2014.
10. **Qingwang Yuan**, Jalel Azaiez, "Cyclic Time-Dependent Reactive Flow Displacements in Porous Media", *Chemical Engineering Science*, Vol. 109, pp. 136-146, 2014.
11. Xiang Zhou, **Qingwang Yuan**, Zhenhua Rui, Hanyi Wang, Jianwei Feng, Liehui Zhang, Fanhua Zeng, "Feasibility Study of CO₂ Huff-n-Puff Process to Enhance Heavy Oil Recovery via Long Core Experiments", *Applied Energy*, Vol. 236, pp. 526-539, 2019.
12. Xiang Zhou, **Qingwang Yuan**, Yizhong Zhang, Hanyi Wang, Fanhua Zeng, Liehui Zhang, "Performance Evaluation of CO₂ Flooding Process in Tight Oil Reservoir via Experimental and Numerical Simulation Studies", *Fuel*, Vol. 236, pp. 730-746, 2019.
13. Xiang Zhou, **Qingwang Yuan**, Xiaolong Peng, Fanhua Zeng, Liehui Zhang, "A Critical Review of CO₂ Huff 'n' Puff Process for Enhanced Heavy Oil Recovery", *Fuel*, Vol. 251, pp. 813-824, 2018.
14. Xiang Zhou, **Qingwang Yuan**, Fanhua Zeng, Liehui Zhang, Sisheng Jiang, "Experimental Study on Foamy Oil Behaviour Using Heavy Oil-Methane System in Bulk Phase, *Journal of Petroleum Science and Engineering*, Vol. 158, pp. 309-321, 2017.
15. Jinjie Wang, **Qingwang Yuan**, Mingzhe Dong, Jianchao Cai, Long Yu, "Experimental Investigation of Gas Mass Transport and Diffusion Coefficients in Porous Media with Nanopores", *International Journal of Heat and Mass Transfer*, Vol. 115, pp. 566-579, 2017.
16. Shanshan Yao, Xiangzeng Wang, **Qingwang Yuan**, Zixi Guo, Fanhua Zeng, "Production Analysis of Multifractured Horizontal Wells with Composite Models: Influence of Complex Heterogeneity", *Journal of Hydrology*, Vol. 583, 124542, 2020.
17. Xiang Zhou, Qi Jiang, **Qingwang Yuan**, Liehui Zhang, Jianwei Feng, Bingchuan Chu, Fanhua Zeng, Guocai Zhu, "Determining CO₂ diffusion coefficient in heavy oil in a bulk phase and in porous media using experimental and mathematical modeling methods", *Fuel*, Vol. 263, 116205, 2019.
18. Jinjie Wang, Long Yu, **Qingwang Yuan**, "Experimental study on permeability in tight porous media considering gas adsorption and slippage effect", *Fuel*, Vol. 253, pp. 561-570, 2019.
19. Shanshan Yao, Xiangzeng Wang, **Qingwang Yuan**, Fanhua Zeng, "Transient Rate Analysis of Stress-sensitive Hydraulic Fractures: Considering the Geomechanical Effect in Anisotropic Shale", *SPE Reservoir Evaluation & Engineering – Formation Evaluation*, Vol. 21, No. 4, 2018.
20. Shanshan Yao, Xiangzeng Wang, **Qingwang Yuan**, Fanhua Zeng, "Estimation of Shale Intrinsic Permeability with Process-Based Pore Network Modeling Approach", *Transport in Porous Media*, <https://doi.org/10.1007/s11242-018-1091-5>, 2018.
21. Jun Ni, Xiang Zhou, **Qingwang Yuan**, Xinqian Lu, Fanhua Zeng, Keliu Wu, "Numerical Simulation Study on Steam-Assisted Gravity Drainage Performance in Heavy Oil Reservoir with a Bottom Water Zone", *Energies*, Vol.10, No. 12, 2017.
22. Xiang Zhou, Fanhua Zeng, Liehui Zhang, Qi Jiang, **Qingwang Yuan**, Jinjie Wang, Guocai Zhu, Xiaoliang Huang, "Experimental and mathematical modeling studies on foamy oil stability using a heavy oil-CO₂ system under reservoir conditions", *Fuel*, Vol., 264, pp. 116771, 2020.
23. Jinjie Wang, Long Yu, **Qingwang Yuan**, Wenbo He, Chaohua Guo, "Effect of Kerogen on the Methane Transport Mechanism in Shale Matrix", *Journal of Earth Science*, Vol. 42, No. 8, pp. 1386-1394, 2017.
24. Yiyong Sui, **Qingwang Yuan**, Taixiang Peng, Jianlei Yang, "The Design of Decision Supporting System in Oil Production Project of Oilfield," *Advanced Materials Research*, Vol. 457, pp. 974-978, 2012.

25. Guishan Ren, **Qingwang Yuan**, "The Application of Real-time Database in Chenghai Oilfield," *Inner Mongolia Petrochemical Industry*, Vol. 20, pp. 35-36, 2010.
26. Yiyong Sui, Xiuling Sun, **Qingwang Yuan**, Dawei Xu, "DEA-Based Analysis of Oil Production Status", *Petroleum Drilling Techniques*, Vol. 38, No. 6, pp. 99-101, 2010.
27. Yiyong Sui, Ling Fan, Jiqiang Wang, **Qingwang Yuan**, "Evaluation of Oil Production Situation Using Analytical Hierarchy Process", *Oil-Gasfield Surface Engineering*, Vol. 29, No. 4, pp. 24-25, 2010.
28. Xiang Zhou, Yongchao Wang, Liehui Zhang, Kewei Zhang, Qi Jiang, Hongbin Pu, Li Wang, **Qingwang Yuan**, "Evaluation of enhanced oil recovery potential using gas/water flooding in a tight oil reservoir", *Fuel*, Vol. 272, pp. 117706, 2020.

Peer-Reviewed Conference Proceedings Published

1. Keju Yan, Baizheng An, **Qingwang Yuan**, "Microwave-Assisted Catalytic Heating for Enhanced Clean Hydrogen Generation from Methane Cracking in Shale Rocks", accepted, SPE Annual Technical Conference and Exhibition, Houston, Texas, USA, 3 – 5 October 2022.
2. **Qingwang Yuan**, Xiangyu Jie, Bo Ren, "High-Purity, CO₂-Free Hydrogen Generation from Crude Oils in Crushed Rocks Using Microwave Heating", SPE-206341, SPE Annual Technical Conference and Exhibition, Dubai, U.A.E., 21 – 23 September 2021.
3. **Qingwang Yuan**, Fanhua Zeng, Kelvin D. Knorr, Muhammad Imran, "Suppressing Frontal Instabilities and Stabilizing Miscible Displacements with Time-Dependent Rates at Nearly Zero Additional Costs", SPE-190320, SPE Improved Oil Recovery Conference, Tulsa, Oklahoma, April 2018.
4. **Qingwang Yuan**, Jie Zhan, Jinjie Wang, Fanhua Zeng, Kelly Knorr, Muhammad Imran, "An Optimal Injection Scheme for Maximizing Oil Recovery in CO₂ Miscible Flooding", CMTC-486447, *Carbon Management Technology Conference*, Houston, Texas, USA, July 2017.
5. **Qingwang Yuan**, Jinjie Wang, Shanshan Yao, Fanhua Zeng, Kelly D. Knorr, Muhammad Imran, "Highly Accurate Simulation of Frontal Instability at Extremely Large Mobility Ratio in Solvent-Based Heavy Oil Recovery", SPE-186083, *SPE Reservoir Characterisation and Simulation Conference and Exhibition*, Abu Dhabi, UAE, May 2017.
6. **Qingwang Yuan**, Xiang Zhou, Fanhua Zeng, Kelly Knorr, Muhammad Imran, "Effects of Concentration-Dependent Diffusion on Mass Transfer and Frontal Instability in Solvent-Based Processes", SPE-184994, *SPE Heavy Oil Conference Canada*, Calgary, Alberta, February 2017.
7. **Qingwang Yuan**, Jalel Azaiez, "Non-Isothermal Displacements with Step-Profile Time Dependent Injections in Homogeneous Media," *Proceedings of the World Congress on Mechanical, Chemical, and Material Engineering (MCM 2015)*, Barcelona, Spain, July 2015, **Best Paper Award**.
8. **Qingwang Yuan**, Jalel Azaiez, "Viscous Fingering Instabilities in Sinusoidal Time-Dependent Flows", *Proceedings of the International Conference on Heat Transfer and Fluid Flow*, Prague, Czech Republic, August 2014.
9. **Qingwang Yuan**, Jalel Azaiez, "Simulation of Miscible Cyclic Injection Flows in Porous Media", SPE-157798, *SPE Heavy Oil Conference Canada*, Calgary, Alberta, June 2012.
10. Shuoshi Wang, **Qingwang Yuan**, Na Yuan, Bor-Jier Shiau, Jeffrey H. Harwell, "In Situ Carbon Dioxide Generation for Improved Recovery: Part II. Concentrated Urea Solutions", SPE-190192, SPE Improved Oil Recovery Conference, Tulsa, Oklahoma, April 2018.
11. Xiangzeng Wang, **Qingwang Yuan**, Shuoshi Wang, Fanhua Zeng, "The First Integrated Approach for CO₂ Capture and Enhanced Oil Recovery in China", CMTC-486571, *Carbon Management Technology Conference*, Houston, Texas, USA, July 2017.
12. Jie Zhan, **Qingwang Yuan**, Allan Fogwill, Hossein Hejazi, Zhangxing Chen, "A Systematic Reservoir Simulation Study on Assessing the Feasibility of CO₂ Sequestration in Shale Gas Reservoirs with

- Potential Enhanced Gas Recovery”, CMTC-484390, *Carbon Management Technology Conference*, Houston, Texas, USA, July 2017.
13. Jinjie Wang, **Qingwang Yuan**, Long Yu, Mingzhe Dong, “Experimental Investigation of Gas Flow Behavior and Diffusion Coefficient in Shale Reservoir”, SPE-185493, *SPE Latin America and Caribbean Petroleum Engineering Conference*, Buenos Aires, Argentina, May 2017.
 14. Shuoshi Wang, Mohannad Kadhum, **Qingwang Yuan**, Borjier Shiau, Jeffrey Harwell, “Carbon Dioxide in Situ Generation for Enhanced Oil Recovery”, CMTC-486365, *Carbon Management Technology Conference*, Houston, Texas, USA, July 2017.
 15. Yiyong Sui, Guoqiang Feng, **Qingwang Yuan**, and Guishan Ren, “The Decision Supporting System of Completion Engineering Program Based on WEB”, *International Conference on Fuzzy Systems and Neural Computing*, Hongkong, China, February 2011.
 16. Yizhong Zhang, Xiangzeng Wang, Shanshan Yao, **Qingwang Yuan**, Fanhua Zeng, “Gas Adsorption Modeling in Multi-scale Pore Structures of Shale”, SPE-191632, the SPE Annual Technical Conference and Exhibition (ATCE), Dallas, Texas, USA, September, 2018.
 17. Zhuangzhuang Wang, Zhaomin Li, Teng Lu, **Qingwang Yuan**, “Research on Enhancing Heavy Oil Recovery Mechanism of Flue Gas Assisted Steam Flooding”, CMTC-486093, *Carbon Management Technology Conference*, Houston, Texas, USA, July 2017.

Academic Presentations

1. **Qingwang Yuan**, “Transport of Contaminant Slices under Unfavorable Viscosity Ratio in Porous Media with Dead-End Pores”, InterPore 14th Annual Meeting, May 30-June 2, Online, 2022.
2. Baizheng An, Daniel Solorzano, **Qingwang Yuan**, “New Flow Regimes of Viscous Fingering Instabilities with Two Wells inside a Hele-Shaw Cell”, AGU Fall Meeting, December 13 – 17, 2021.
3. **Qingwang Yuan**, Bowen Ling, “Viscous Fingering Instabilities in Miscible Displacements in Porous Media with Dead-End Pores: A Parametric Study”, AGU Fall Meeting, December 13 – 17, 2021.
4. Baizheng An, **Qingwang Yuan**, “Viscous Fingering in Miscible Displacements in Porous Media with Dead-End Pores”, InterPore 13th Annual Meeting, May 31-June 4, Online, 2021.
5. **Qingwang Yuan**, “Scaling Analysis of Coupled Compaction, Kerogen Conversion, and Petroleum Expulsion for Primary Migration”, AAPG Annual Convention & Exhibition, Houston, May 19-22, 2019.
6. **Qingwang Yuan**, “Scaling Analysis of Coupled Compaction, Kerogen Conversion, and Petroleum Expulsion”, 11th Annual BPSM Affiliates Meeting, Coalinga, CA, November 12-14, 2018.
7. **Qingwang Yuan**, “Reduction of Interfacial Instabilities in Miscible Displacements in Subsurface Porous Media”, InterPore 10th Annual Meeting and Jubilee, May 14-17, New Orleans, USA, 2018.
8. **Qingwang Yuan**, “Numerical Modeling of Subsurface Flows in Porous Media: Miscible Displacements”, presented to the Faculty of Engineering and Applied Science, University of Regina, July 2017.
9. **Qingwang Yuan**, "Non-Isothermal Displacements with Step-Profile Time Dependent Injections in Homogeneous Media," the World Congress on Mechanical, Chemical, and Material Engineering (MCM 2015), Barcelona, Spain, July 2015, **Award for the best conference paper**.
10. **Qingwang Yuan**, “Viscous Fingering Instability for Time-Dependent Injection Velocities”, the Workshop on Complex Fluids and Flows in Industry and Nature II, Canada, July 2013.
11. **Qingwang Yuan**, “Stability of Miscible Displacements in Porous Media for Time-Dependent Injection Velocities,” the 65th Annual Meeting of the APS Division of Fluid Dynamics, USA, November 2012.
12. François Gelin, Johannes Wendebourg, **Qingwang Yuan**, Mei Mei, “Getting the Right Fluid out of the Source Rock Using Extensive Data Sets from Shale Plays and Compositional Modeling”, Regional

Variations in Charge Systems and the Impact on Petroleum Fluid Properties in Exploration, Dubai, United Arab Emirates, February 2019.

Invited Talks

1. **Qingwang Yuan**, “Influences of Dead-End Pores in Porous Media on Viscous Fingering in Miscible Displacements”, invited by the Department of Petroleum Engineering at University of Wyoming, Online, November 11, 2021.
2. **Qingwang Yuan**, “In-Situ Hydrogen Generation and Production from Petroleum Reservoirs”, invited by the Permian Basin Geophysical Society, Online, October 27, 2021.
3. **Qingwang Yuan**, “Control of Viscous Fingering in Miscible Displacements”, invited by the Chemical & Petroleum Engineering, University of Kansas, Online, October 29, 2020.

Work Experience

- **Reservoir Engineer**, CNOOC Research Institute, Beijing, China 12/2014 – 04/2016
Heavy Oil EOR Group - Nexen Oilsands Evaluation Project
 Assessed field development plan and economic budgets of four new oilsands pads in Alberta, Canada. Evaluated EOR stimulations and provided technical support in optimization of SAGD wells.
Missan Redevelopment EOR Group - Iraq Missan-Mishrif Oilfield
 Analyzed performance of old oil wells. Designed new well type, space, and well pattern for more efficient redevelopment. Conducted history matching and production prediction. Analyzed geological and reservoir data to build models of water flooding with Eclipse/Intersect.
Enhanced Waxy Oil Reservoir Development R&D Group - Uganda Kingfisher Oilfield
 Analyzed wax appearance temperature, wax deposition behaviors, and effects on porosity and permeability. Built compositional model with Eclipse to study mechanisms of wax deposition, water temperature, and heterogeneity. Conducted uncertainty analysis with a series of uncertainty factors.
CNOOC Jobi-Rii EOR Group - Uganda Jobi-Rii Polymer vs. Water Flooding
 Assisted to investigate field performance with polymer and water flooding. Optimized well pattern, space, polymer startup timing, and first oil schedule at low/medium/high oil price.

Professional Service Activities

- **Journal Editor Board**
 1. Associate Editor, Journal of Petroleum Science and Engineering, 01/2019 – Present
 2. Guest Editor, Energies, Special Issue “Advances in Fluid Transport for Sustainable Energy and Environment in Subsurface Systems”, 03/2022 – 11/2022.
 3. Co-Guest Editor, Geofluids, Special Issue “Recent Advancements in Enhancing Heavy Oil Recovery”, 06/2021 – 09/2021.
 4. Co-Guest Editor, Geofluids, Special Issue “New Advances in the Sustainability of Unconventional Oil and Gas Resources”, 07/2020 – 02/2022.
- **Conference Committees and Judges**
 1. Minisymposium co-organizer, “Mixing, dispersion and reaction processes across scales in heterogeneous and fractured media”, InterPore2022, 30 May – 02 June 2022.
 2. Session Chair, “Fingering Instabilities in Subsurface Porous Media”, Section: Near-surface Geophysics, AGU Fall Meeting, New Orleans, Louisiana, & Online, 13 – 17 December 2021.
 3. Convener, “Reactive Transport in Subsurface systems at multiple scales: Experiments and Characterization”, AGU Fall Meeting, New Orleans, Louisiana, & Online, 13 – 17 December 2021.

4. Minisymposium co-organizer, "Mixing, dispersion and reaction processes across scales in heterogeneous and fractured media", InterPore – International Society for Porous Media, 2021, 2022.
 5. Minisymposium organizer, "Modeling and controlling of viscous fingering in miscible and immiscible displacements in subsurface porous media", InterPore 10th Annual Meeting & Jubilee, New Orleans, USA, 2018
 6. Judge at the Canada-Wide Science Fair, Session Chair, Regina, SK, Canada, 2017
 7. Judge in Alberta Graduate Conference, Calgary, AB, Canada, 2011
- **Award Committees**
 1. Interpore student poster award committee member, 2018
 - **Grant Reviewer**
 1. Reviewed 3 research proposals from the Mitacs Elevate and Accelerate Programs, 2017 – Present
 2. Panelist, NSF Fluid Dynamics Program, Chemical, Bioengineering, Environmental, & Transport Systems Division, March 22, 2021
 - **Technical Reviewer Experience**

Serve as reviewers in the following journals: Journal of Fluid Mechanics, Journal of Petroleum Science and Engineering; Journal of Natural Gas Science and Engineering; Fuel; Energy & Fuels; Energies; Transport in Porous Media; Chemical Engineering Journal; International Journal of Heat and Mass Transfer; Industrial & Engineering Chemistry Research; Journal of Energy Resources Technology; International Journal of Oil, Gas and Coal Technology; Petroleum
 - **Professional Affiliations**
 1. Education & Outreach Coordinator, Early Career Network, International Partnership for Hydrogen and Fuel Cells in the Economy (IPHE), 10/2020 – Present
 2. SPE Member, Society of Petroleum Engineers
 3. Member of International Society for Porous Media (InterPore)
 4. American Geophysical Union (AGU) member
 5. Professional Engineer, Association of Professional Engineers and Geoscientists of Saskatchewan

Training

1. Grant Proposal Writing Workshop, Texas Tech University, May 2021
2. Preparing for Faculty Careers 2018, Stanford University, April to June 2018
3. Scientific Management: How to Get Funding and Write a Grant, Stanford University, February 2018
4. Starting a Laboratory, Stanford University, February 2019