Curriculum Vitae

**Jianjia Yu**

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## Education

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| Ph.D., 2012 | Petroleum Engineering, New Mexico Tech, Socorro, NM, USA |
| M.S., 2009 | Polymer Chemistry and Physics, Hubei University, Wuhan, China |
| B.S., 2006 | Chemical Engineering, Hubei University, Wuhan, China |

## Professional Experience

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| 2018 – Present | Research Engineer/Section Head, Produced Water and Petroleum Engineering, Petroleum Recovery Research Center, New Mexico Tech, Socorro, NM |
| 2013 - Present | Adjunct Faculty, Department of Petroleum and Natural Gas Engineering, New Mexico Tech, Socorro, NM |
| 2012 -2017 | Research Scientist, Produced Water and Petroleum Engineering, Petroleum Recovery Research Center, New Mexico Tech, Socorro, NM |

## Research Grants

1. "Hydrophilic-omniphobic HF membrane-based DCMD and crystallization for zero liquid discharge of oilfield produced water (R20AC00054), $500,000.00 (1/2021 to 12/2022), funded by the Bureau of Reclamation. ***PI***
2. "Development of a Novel Janus-HFM based DCMD Process for Cost-Effective and Energy-Efficient Desalination of High Salinity F/P Water (R17AC00143)", $221,946.00 (10/2017 to 06/2019), funded by the Bureau of Reclamation. ***PI***
3. "Development of a Portable and Scalable Hollow Fiber Membrane Based Ultrafiltration-Nanofiltration (UF-NF) Process for Water Remediation of Dairy Farms", $245,960.00 (04/2018 to 06/2019), funded by the State of New Mexico. ***PI***
4. "A Portable, Two-Stage, Antifouling Hollow Fiber Membrane Nanofiltration Process for the

Cost- Effective Treatment of Produced Water (12123-16)", $858,678.00 (06/2014 to 09/2016), funded by the U.S. Department of Energy (DOE) through the Research Partnership to Secure Energy for America (RPSEA). ***PI***

5. "Formulation of High-Performance ASP Surfactants for the Daqing Oilfield". $200,000.00 (03//2017 to 02/2019), funder by Shandong GINZRE New Material Development Co. Ltd. ***Co-PI***
6. "Testing of Cairn's Existing ASP Formulation for Mangala Field & Evaluating Suitability and Commercial Implications of Any Other Alternative Formulation". $350,000.00 (11/2014 to 11/2015), funded by the Cairn India. ***Co-PI***
7. "Development of a $CO_2$ Chemical Sensor for Downhole $CO_2$ Monitoring in Carbon Sequestration (DE-FE0009878)", $1.4M (10/2012 to 10/2016), funded by the U.S. Department of Energy (DOE). ***Co-PI***

## Publications in Peer-Referred Journals

1. Lusi Zou, Xiangrui Zhang, Pri Gusnawan, Guoyin Zhang, **Jianjia Yu**, Crosslinked PVDF based hydrophilic-hydrophobic dual-layer hollow fiber membranes for direct contact membrane distillation desalination: from the seawater to oilfield produced water, *Journal of Membrane Science*, 619 (2021) 118802.
2. Guoyin Zhang, **Jianjia Yu**, Effect of commonly used EOR polymers on low concentration surfactant phase behaviors, *Fuel*, 286 (2021) 119465.
3. Pri Gusnawan, Susantha Ganegamage, Michael Heagy, **Jianjia Yu**, Reactive $CO_2$ absorption mechanism of a soybean-based (SBB) solvent containing 18 amino acid salts in polyvinylidene fluoride (PVDF) hollow fiber membrane-based gas-liquid membrane contactor, *Chemical Engineering Journal*, 399 (2020) 125819.
4. Lusi Zou, Pri Gusnawan, Guoyin Zhang, **Jianjia Yu**, Study of the effective thickness of the water-intrudable hydrophilic layer in dual-layer hydrophilic-hydrophobic hollow fiber membranes for direct contact membrane distillation, *Journal of Membrane Science*, 615 (2020) 118552.
5. Pri. Gusnawan, Lusi Zou, Guoyin Zhang, **Jianjia Yu**, Regeneration Behavior of a Sustainable Bioinspired Soybean-Based Solvent for $CO_2$ Capture, *ACS Sustainable Chemistry & Engineering*, 8 (2020) 3929-3937.
6. Lusi Zou, Pri Gusnawan, Ying-Bing Jiang, Guoyin Zhang, **Jianjia Yu**, Macrovoid-Inhibited PVDF Hollow Fiber Membranes via Spinning Process Delay for Direct Contact Membrane Distillation, *ACS Applied Materials & Interfaces* 12 (2020) 28655-28668.
7. Lusi Zou, Pri Gusnawan, Guoyin Zhang, **Jianjia Yu**. Novel Janus composite hollow fiber membrane-based direct contact membrane distillation (DCMD) process for produced water desalination. *Journal of Membrane Science* (2020) 597:117756.
8. Pri Gusnawan, Lusi Zou, Guoyin Zhang, **Jianjia Yu**. Performance and stability of a bio-inspired soybean-based solvent for $CO_2$ capture from flue gas. *Chemical Engineering Journal* (2020) 385: 123908.
9. Xin Sui, Zhao Chen, Ivan Kurnia, Xu Han, **Jianjia Yu**, Guoyin Zhang. Alkaline-surfactant-

polymer flooding of active oil under reservoir conditions. *Fuel* (2020) 262: 116647.

10. Shuying Dong, Lingfang Cui, Yujia Tian, Longji Xia, YuhanWu, **JianjiaYu**, David M. Bagley, Jianhui Sun, Maohong Fan. A novel and high-performance double Z-scheme photocatalyst ZnO-$SnO_2$-$Zn_2SnO_4$ for effective removal of the biological toxicity of antibiotics, *Journal of Hazardous Materials*, (**2020**) 123017.
11. Xu Han, Zhao Chen, Guoyin Zhang, **Jianjia Yu**, Surfactant-polymer flooding formulated with commercial surfactants and enhanced by negative salinity gradient, *Fuel*, 274 (**2020**) 117874.
12. Ivan Kurnia, Guoyin Zhang, Xu Han, **Jianjia Yu**. Zwitterionic-anionic surfactant mixture for chemical enhanced oil recovery without alkali. *Fuel* (2020) 259: 116236.
13. Xu Han, Ivan Kurnia, Zhao Chen, **Jianjia Yu**, Guoyin Zhang. Effect of oil reactivity on salinity profile design during alkaline-surfactant-polymer flooding. *Fuel* (2019) 254: 115738.
14. Chunkai Fu, **Jianjia Yu**, Ning Liu. The effect of foam quality, particle concentration and flow rate on nanoparticle-stabilized $CO_2$ mobility control foams. *RSC Advance* (2019) 9: 9313.
15. Pri J Gusnawan, Shangwen Zha, Lusi Zou, Guoyin Zhang, **Jianjia Yu**. "Soybean and moringa based green biosolvents for low-concentration $CO_2$ capture via a hollow fiber membrane contactor". *Chemical Engineering Journal* (2018) 335:631.
16. Zhao Chen, Xu Han, Ivan Kurni, **Jianjia Yu**, Guoyin Zhang, Liang Li. Adoption of phase behavior tests and negative salinity gradient concept to optimize Daqing oilfield alkaline-surfactant-polymer flooding. *Fuel* (2018) 232:71.
17. Chunkai Fu, **Jianjia Yu**, Ning Liu. "Nanoparticle-stabilized $CO_2$ foam for waterflooded residual oil recovery". *Fuel* (2018) 234:809.
18. Shangwen Zha, **Jianjia Yu**, Guoyin Zhang, Ning Liu and Robert Lee. Polyethersulfone (PES)/Cellulose Acetate Butyrate (CAB) Hybrid Hollow Fiber Membranes for Organic Matter Removal from Produced Water. *SPE Journal* (2017) 22: 1478.
19. Shangwen Zha, Pri J Gusnawan, Jiajin Lin, Guoyin Zhang, Ning Liu, **Jianjia Yu**. "Integrating a novel TS-af-HFM NF process for portable treatment of oilfield produced water". *Chemical Engineering Journal* (2017) 311: 203.
20. Jingshan San, Sai Wang, **Jianjia Yu**, Ning Liu, Robert Lee. "Nanoparticle-Stabilized Carbon Dioxide Foam Used in Enhanced Oil Recovery: Effect of Different Ions and Temperatures". *SPE Journal* (2017) 22: 1416.
21. Shangwen Zha, Pri J Gusnawan, Guoyin Zhang, Ning Liu, Robert Lee, **Jianjia Yu**. "Experimental study of PES/$SiO_2$ based TFC hollow fiber membrane modules for oilfield produced water desalination with low-pressure nanofiltration process". *Journal of Industry and Engineering Chemistry* (2016) 44: 118.
22. Shangwen Zha, Guoyin Zhang, Noel Dawson, **Jianjia Yu**, Ning Liu, Robert Lee. "Study of PVDF/Si-R hybrid hollow fiber membranes for removal of dissolved organics from produced water by membrane adsorption", *Separation and Purification Technology* (2016)163:290.
23. Sai Wang, Jingshan San, **Jianjia Yu**, Ning Liu. "A downhole $CO_2$ sensor to monitor $CO_2$ movement in situ for geologic carbon storage", *International Journal of Greenhouse Gas Control* (2016) 55, 202.
24. Munawar Khalil, Sai Wang, **Jianjia Yu**, Robert L Lee, Ning Liu. "Electrodeposition of Iridium Oxide Nanoparticles for pH Sensing Electrodes", *Journal of The Electrochemical Society* (2016), 163(9) B485-B490.

25. Shangwen Zha, **Jianjia Yu**, Guoyin Zhang, Ning Liu, Robert Lee. Polyethersulfone (PES)/cellulose acetate butyrate (CAB) composite hollow fiber membranes for BTEX separation from produced water. *RSC Advances* (2015) 5:105692.
26. **Jianjia Yu**, Munawar Khalil, Ning Liu, Robert Lee. "Iridium oxide-based chemical sensor for in situ pH measurement of oilfield-produced water under subsurface conditions", *Ionics* (2015) 21:855.
27. **Jianjia Yu**, Munawar Khalil, Ning Liu, Robert Lee. "Effect of particle hydrophobicity on $CO_2$ foam generation and foam flow behavior in porous media", *Fuel* (2014) 126:104.
28. Munawar Khalil, **Jianjia Yu**, Ning Liu, Robert Lee. "Non-aqueous modification of synthesized hematite nanoparticles with oleic acid", *Colloids and Surfaces A: Physicochemical and Engineering Aspects* (2014) 453:7.
29. Munawar Khalil, **Jianjia Yu**, Ning Liu, Robert Lee. "Hydrothermal synthesis, characterization, and growth mechanism of hematite nanoparticles", *J Nanoparticle Research* (2014) 16:2362.
30. **Jianjia Yu**, Liangxiong Li, Ning Liu, and Robert Lee. "An approach to prepare defect-free PES/MFI-type zeolite mixed matrix membranes for $CO_2/N_2$ Separation", *Journal of Materials Science* (2013) 48:3782.
31. Shoulin He, **Jianjia Yu**, Cuihua Li, Jianhua Fang, Jing Xu, Rong Guan, "Sulfonated poly (bis-A)-sulfones as proton exchange membranes for direct methanol fuel cell application". *Polymer Engineering & Science* (2011) 51: 264.
32. **Jianjia Yu**, Chao Dong, Jianhong Liu, Cuihua Li, Jianhua Fang, Rong Guan, "Crosslinked sulfonated poly (bis-A)-sulfones as proton exchange membrane for PEM fuel cell application". *Journal of Materials Science* (2010) 45:1017.
33. Jing Xu, **Jianjia Yu**, Rong Guan, Jianhua Fang, "A new crosslinked sulfonated polystyrene membrane for proton exchange membrane fuel cell", *High Performance Polymers* (2010) 22: 395.
34. Jing Xu, **Jianjia Yu**, Rong Guan, "Preparation and properties of crosslinked sulfonated polystyrene/polyvinyl alcohol membranes", *Membrane Science and Technology* (2010) 30:24.
35. Shufang Jiang, **Jianjia Yu**, Rong Guan, "Application of hyper branched polymer in epoxy resin". *Adhesion in China* (2010) 2: 66.
36. Yuan Yuan, **Jianjia Yu**, Rong Guan, "Progress of cross-linking proton exchange membranes", *Science & Technology in Chemical Industry* (2009) 17: 66.
37. **Jianjia Yu**, Juan Liu, Jin Xie, Rong Guan, "Application of organic fluorine-containing polymer adhesives", *Adhesion in China*, 2008, 29:36.
38. Jing Xu, Rong Guan, **Jianjia Yu**, Hua Dai, "Development on the study of proton exchange membranes composited with inorganic sol id proton conductors", *New Chemical Materials* (2007)35: 23.
39. Rong Guan, Hua Dai, Jing Xu, **Jianjia Yu**, Deping Lu, "Polymer Blends Based on Sulfonated Polyether -sulfone as Proton Exchange Membrane Materials, Proceedings of the 7th Chinese Hydrogen Energy Conference", *Journal of Wuhan University of Technology* (2006) 28: 558.
40. **Jianjia Yu**, Fei Li and Xuan Zou, "Preparation of sulfonated Poly (2, 6-dimethyl-1, 4-phyenylene oxide)", *Chinese Journal of Colloid & Polymer* (2005) 23: 22.
41. **Jianjia Yu**, Fei Li, Xuan Zou, "Discussion on experimental techniques of the high- pressure reactor operations", *Scientific Research Monthly* (2005) 8: 9.

## Full Papers in Peer-Referred Proceedings of SPE Conferences

42. Xu Han, Guoyin Zhang, **Jianjia Yu**, Zhao Chen. "An Investigation of Retention and Unusually High Apparent Viscosity of Hydrophobically Associative Polymer in Porous Media", paper SPE-190330-MS present at the Nineteenth SPE Improved Oil Recovery Symposium held in Tulsa, Oklahoma, USA, 14-18 April, 2018.
43. Jingshan San, Sai Wang, **Jianjia Yu**, Robert Lee, Ning Liu. "Nanoparticle Stabilized $CO_2$ Foam: Effect of Different Ions", paper SPE-179628-MS present at the Eighteenth SPE Improved Oil Recovery Symposium held in Tulsa, Oklahoma, USA, 11-13 April, 2016.
44. Zhao Chen, Cheng Du, Ivan Kurnia, Junjie Lou, Guoyin Zhang, **Jianjia Yu**, Robert L Lee. "A Study of Factors Influencing Polymer Hydrodynamic Retention in Porous Media", paper SPE-179607-MS present at the Eighteenth SPE Improved Oil Recovery Symposium held in Tulsa, Oklahoma, USA, 11-13 April, 2016.
45. I. Kurnia, G. Zhang, Z. Chen, **J. Yu**, C. Du, J. Lou and R. Lee. "Reaching Ultra-low IFT with Low-pH Zwitterionic Surfactant System", paper preset at the *78th EAGE Conference and Exhibition* held in Vienna, Austria, 31 May, 2016.
46. Shangwen Zha, **Jianjia Yu**, Guoyin Zhang, Ning Liu and Robert Lee. Polyethersulfone (PES)/Cellulose Acetate Butyrate (CAB) Hybrid Hollow Fiber Membranes for Organic Matter Removal from Produced Water. Paper SPE 173787-MS present at *the SPE International Symposium on Oilfield Chemistry* held in The Woodlands, Texas, USA, 13–15 April, 2015.
47. Zhang, G., **Yu, J.**, Du, C, and Lee, R. 2015. Formulation of Surfactants for Very Low/High Salinity Surfactant Flooding without Alkali. Paper SPE 173738 present at *the SPE International Symposium on Oilfield Chemistry* held in The Woodlands, Texas, USA, 13–15 April, 2015.
48. **Jianjia Yu**, Sai Wang, Ning Liu and Robert Lee. "Study of Particle Structure and Hydrophobicity Effects on the Flow Behavior of Nanoparticle-Stabilized $CO_2$ Foam in Porous Media", paper SPE169047-MS present at *the Nineteenth SPE Improved Oil Recovery Symposium* held in Tulsa, Oklahoma, USA, 12-16 April, 2014.
49. Di Mo, Bao Jia, **Jianjia Yu**, Ning Liu and Robert Lee. "Study Nanoparticle-stabilized $CO_2$ Foam for Oil Recovery at Different Pressure, Temperature, And Rock Samples", paper SPE169110-MS 12-16 April, 2014.
50. **Jianjia Yu**, Di Mo, Ning Liu and Robert Lee. "The Application of Nanoparticle Stabilized $CO_2$ Foam for Oil Recovery", paper SPE 13OCS-162-SPE present at *the SPE International Symposium on Oilfield Chemistry* held in Woodlands, Texas, USA, 8-10 April, 2013.
51. **Jianjia Yu**, Cheng An, Di Mo, Ning Liu and Robert Lee. "Foam mobility control for nanoparticle-stabilized $CO_2$ foam", paper SPE 153336 present at *the Eighteenth SPE Improved Oil Recovery Symposium* held in Tulsa, Oklahoma, USA, 14-18 April, 2012.
52. **Jianjia Yu**, Cheng An, Di Mo, Ning Liu and Robert Lee. "Study of adsorption and transportation behavior of nano particles in three different porous media", paper SPE153337 present at *the Eighteenth SPE Improved Oil Recovery Symposium* held in Tulsa, Oklahoma, USA,14-18 April, 2012.
53. **Jianjia. Yu**, Ning. Liu, Liangxiong. Li, Robert. Lee. "Generation of nanoparticle-stabilized supercritical $CO_2$ foams", paper CMTC 150849 present at *the Carbon Management Technology Conference* held in Orlando, Florida, USA, 7-9 February, 2012.
54. Di Mo, **Jianjia Yu**, Ning Liu and Robert Lee. "Study of the effects of different factors on nano

particle stabilized $CO_2$ foam for mobility control", paper SPE159282 present at *the SPE Annual Technical Conference and Exhibition* held in San Antonio, Texas, USA, 8-10 October, 2012.

55. Z. Wang, B. Lin, G. Sha, Y. Zhang, **J. Y** and Li Li. "A combination of biodegradation and microfiltration for removal of oil and suspended solids from polymer-containing produced water", Paper SPE 140916 present at the *SPE American E&P Health, Safety, Security and Environmental Conference* held in Houston, Texas, USA, 21-23 March, 2011.

## Other Conferences

56. Lusi Zou, Guoyin Zhang, **Jianjia Yu**. "Janus hollow fiber membrane-based DCMD process for desalination of high-salinity oilfield produced water", presented at the WEFTEC **2020**, New Orleans, LA (Virtual conference).
57. Shangwen Zha, Guoyin Zhang, **Jianjia Yu**. "Field Demonstration of a portable TS-af-HFM nanofiltration process for the cost-effective treatment of oilfield produced water." 2nd International conference on Industrial Chemistry and Water Treatment, Las Vegas, USA, May 22-23, 2017.
58. **Jianjia Yu**, Munawar Khalil, Ning Liu, and Robert Lee. "Prepare iridium oxide chemical sensor for pH measurement at harsh conditions." In Abstracts of Papers of the American Chemical Society, vol. 247. 1155, 2014.
59. Khalil, Munawar, **Jianjia Yu**, Ning Liu, and Robert L. Lee. "Fabrication of metal-based pH sensing electrode via electrodeposition of iridium oxide nanoparticles." In Abstracts of Papers of the American Chemical Society, vol. 248. 1155, 2014.
60. **Jianjia Yu**, Rong Guan, Jing Xu, Deping Lu, "Effects of crosslinking on the properties of sulfonated polysulfone proton exchange membrane", *International Symposium on Polymer Physics*, Xiamen, China, 2008.
61. Jing Xu, Jianhua Fang, **Jianjia Yu**, Lu Deping, Rong Guan, "Preparation and Properties of Crosslinked New PS Proton Exchange Membranes", *2008' Polymer Materials and Engineering Symposium of China*, Guiyang, China, October 15-18, 2008.
62. Jing Xu, **Jianjia Yu**, Rong Guan, Jianhua Fang, "The Synthesis and Characterization of SPS/PVA Cross-linked membranes as Proton Exchange Membrane for PEM Fuel Cell", *2007' Polymer Symposium of China*, Chengdu, China, October 9-13, 2007.
63. **Jianjia Yu**, Rong Guan, Jing Xu, Jianhua Fang, "Preparation and properties of novel crosslinking sulfonated polysulfone used for proton exchange membranes", *2007' Polymer Symposium of China*, Chengdu, China, October 9-13, 2007.

## Membership and Service

- Member: Society of Petroleum Engineers (SPE, Sep. 2009-present).
- Invited Reviewer for more than 25 journals (>200 papers reviewed).