

# Guoyin Zhang

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## Education

- 08/2010-11/2013, Ph. D student in Petroleum Engineering, New Mexico Institute of Mining & Technology.
- 01/2006—06/2007, Master of Science in Petroleum Engineering, New Mexico Institute of Mining & Technology.
- 07/1992—07/1996, Bachelor of Science in Applied Chemistry, China University of Petroleum.

## Professional Experience

- **02/2014-present** Research Scientist (section head): Petroleum Recovery Research Center (PRRC) at New Mexico Institute of Mining & Technology.  
**Research Field:** Polymer flooding, alkaline/surfactant/polymer (ASP) flooding and produced water treatment.
- **07/2007-07/2010** Senior Research Scientist (Section Head): Daqing Research Institute of Exploration and Development, PetroChina.  
**Research Field:** Screening, evaluation and development of surfactants for Daqing surfactant/polymer (SP) flooding.
- **07/1999-12/2005** Research Scientist (Section Head): Daqing Research Institute of Exploration and Development, PetroChina.  
**Research Field:** Development and formulation of surfactants for ASP flooding, mechanisms of ASP flooding.
- **07/1996-06/1999** Research Assistant: Daqing Research Institute of Exploration and Development, PetroChina.  
**Research Field:** ASP-Foam flooding, screening and evaluation of EOR surfactants.

## Research Interests

- Chemical EOR using surfactants, polymers, alkalis, or their combinations.
- Formulation and development of EOR surfactants.
- Polymer and surfactant retention in porous media.
- Soil Remediation using chemical EOR.

## Publications and Presentations

1. Zhang, Guoyin, and Jianjia Yu. (2020). "Effect of commonly used EOR polymers on low concentration surfactant phase behaviors." *Fuel* 286: 119465.
2. Seright, R. S., Wavrik, K. E., Zhang, G., & AlSofi, A. M. (2020). Stability and Behavior in Carbonate Cores for New Enhanced-Oil-Recovery Polymers at Elevated Temperatures in Hard Saline Brines. *SPE Reservoir Evaluation & Engineering*.
3. Han, X., Chen, Z., Zhang, G., & Yu, J. (2020). Surfactant-polymer flooding formulated with commercial surfactants and enhanced by negative salinity gradient. *Fuel*, 274, 117874.

4. Sui, X., Chen, Z., Kurnia, I., Han, X., Yu, J., & Zhang, G. (2020). Alkaline-surfactant-polymer flooding of active oil under reservoir conditions. *Fuel*, 262, 116647.
5. Ivan Kurnia, **Guoyin Zhang**, Xu Han, Jianjia Yu. 2020. Zwitterionic-Anionic Surfactant Mixture for Chemical Enhanced Oil Recovery without Alkali. *Fuel*. Vol 259, 116236.
6. Han X, Kurnia I, Chen Z, Yu J, **Zhang G**. 2019. Effect of oil reactivity on salinity profile design during alkaline-surfactant-polymer flooding. *Fuel*. Vol 254:115738.
7. Zhao Chen, Xu Han, Ivan Kurnia, Jianjia Yu, Guoyin Zhang, and Liang Li. 2018. Adoption of Phase Behavior Tests and Negative Salinity Gradient Concept to Optimize Daqing Oilfield Alkaline-Surfactant-Polymer Flooding. *Fuel*. Vol 232, 71-80.
8. Han, X., **Zhang G.**, Yu J., Chen Z. and Kurnia I. 2018. An Investigation of Retention and Unusually High Apparent Viscosity of Hydrophobically Associative Polymer in Porous Media. SPE 190330 presented at the SPE Improved Oil Recovery Conference in Tulsa, Oklahoma, 14-18 April.
9. Shangwen Zha, **Guoyin Zhang**, Noel Dawson, Jianjia Yu, Ning Liu, and Robert Lee. 2016. Study Of PVDF/Si-R Hybrid Hollow Fiber Membranes for Removal of Dissolved Organics from Produced Water by Membrane Adsorption. *Separation and Purification Technology*. Vol 163, 290-299. <http://dx.doi.org/10.1016/j.seppur.2016.03.003>.
10. Chen, Z., Du, C., Kurnia, I., Lou, J., **Zhang, G.**, Yu, J., and Lee, L. 2016. A Study of Factors Influencing Polymer Hydrodynamic Retention in Porous Media. SPE 179607 presented at the SPE Improved Oil Recovery Conference in Tulsa, Oklahoma, 11-13 April.
11. Shangwen Zha, Jianjia Yu, **Guoyin Zhang**, Ning Liu, and Robert Lee. 2015. Polyethersulfone (PES)/Cellulose Acetate Butyrate (CAB) Composite Hollow Fiber Membranes for BTEX Separation from Produced Water. *RSC Advances*. 2015, 5, 105692-105698.
12. **Zhang, G** and Seright, R.S. 2014. Effect of Concentration on HPAM Retention in Porous Media. *SPE Journal*. Vol 19 (3), 373-380. <http://dx.doi.org/10.2118/166265-PA>.
13. Seright, R.S., **Zhang, G.**, Akanni, O.O., and Wang, D. 2012. A Comparison of Polymer Flooding with in-Depth Profile Modification. *Journal of Canadian Petroleum Technology*. Vol 51 (5), 393-402. <http://dx.doi.org/10.2118/146087-PA>.
14. Yang Y., Wang, H., Liu, R., Cui, Song, Yu, J., and **Zhang, G**. 2010. Advances of Daqing Oilfield EOR Surfactants. *Sino-Global Energy*. Vol 10, 43-50.
15. **Zhang, G.**, Liu Q., Li L., Wang H., Yang, Y., Shan, C., and Wu, X. 2010. Application of Combined Surfactants in Tertiary Oil Recovery. *Sino-Global Energy*. Vol 2, 56-59.
16. Wang, F., Wu, X., Chen, G., Li, H., and **Zhang, G**. 2009. Technical Progress of Alkaline-Surfactant-Polymer (ASP) Flooding in Daqing Oilfield. *Petroleum Geology & Oilfield Development in Daqing*. Vol 28, 154-162.
17. Chen, J., Yang, Y., Shan, C., Wang, H., **Zhang, G.**, Wu, X., and Jiang, Z. 2008. Manufacture and technical advances in surfactant raw material for EOR. *Modern Chemical Industry*. Vol 28 (5), 17-21.

18. Wu, X., Liu, Q., **Zhang, G.**, Yang, Y., and Shan, C. 2006. Application of New Surfactant for Weak Alkali in Enhanced Oil Recovery. *Detergent & Cosmetics*. Vol 29 (10), 31-33.
19. Guo, W., Yang, Z., Wu, X., **Zhang, G.**, Wang, H. 2006. New-type of Weak Alkali Surfactant Applied to Tertiary Oil Recovery. *Acta Petrolei Sinica*. Vol 5, 79-82.
20. Liu, Q., **Zhang, G.**, Wang, H., Yang, Y., and Wang, F. 2004. Raw Material Screen for the Synthesis of Alkylbenzene Sulfonate Surfactant in EOR. *China Petroleum and Chemical Industry*. (Vol II), Petroleum Industry Press, Beijing, 323-325.
21. Wang, H., Wu, X., **Zhang, G.**, and Yang, Y. 2004. Research Progress on the Surfactants for ASP Flooding in Daqing Oilfield. *Petroleum Geology and Recovery Efficiency*. Vol 11 (5), 62-64.
22. Wang, H., Yang, Y., **Zhang, G.**, and Wu, X. 2003. Application Prospects of New Type of Gemini Surfactants in Tertiary Oil Recovery. *Petroleum Geology and Recovery Efficiency*. Vol 10 (6), 59-61.
23. Yang, Y., Wang, H., **Zhang, G.**, and Wu, X. 2003. Ultra-low Concentration Surfactants for Sandstone and Limestone Floods. *Foreign Oilfield Engineering*. Vol 19, 6-9.
24. Chen, G., Wu, X., **Zhang, G.**, and Zhao, Y. 2002. Study on the Effect of Organism Existing in the Oilfield Water on the Interfacial Tension of ASP System. *Petroleum Geology & Oilfield Development in Daqing*. Vol 21 (3), 65-67.
25. **Zhang, G.**, Wu, X., Liao, G., Chen, G., and Xu, Y. 2001. Study on the Surfactant of Alkyl Benzene Sulfonate Used for Tertiary Recovery. *Petroleum Geology & Oilfield Development in Daqing*. Vol 20 (2), 26-27.
26. Wu, X., **Zhang, G.**, Liu, Q., Chen, G. and Wu, J. 2001. Development of Petroleum Carboxylate and Its Application in Tertiary Recovery. *Petroleum Geology and Recovery Efficiency*. Vol 8 (1), 62-63.
27. Wu, X., Chen, G., and **Zhang, G.** 2000. Formulation of Alkali/Surfactant/Polymer-Foam Flooding. *Petroleum Geology & Oilfield Development in Daqing*. Vol 19, 27-29.
28. Liu, Q., **Zhang, G.**, and Jiang, J. 2005. Application of GC-MS to the Research of EOR Surfactants. Paper presented at the National Symposium on Organic Mass Spectrometry, Lijiang, Yunnan, 31 October.

## Presentations

1. Chen, Z., Du, C., Kurnia, I., Lou, J., **Zhang, G.**, Yu, J., and Lee, L. 2016. A Study of Factors Influencing Polymer Hydrodynamic Retention in Porous Media. SPE 179607 presented at the SPE Improved Oil Recovery Conference in Tulsa, Oklahoma, 11-13 April.
2. **Zhang, G** and Seright, R.S. 2015. Hydrodynamic Retention and Rheology of EOR Polymers in Porous Media. Paper SPE 173728 presented at the SPE International Symposium on Oilfield Chemistry held in Woodlands, Texas, USA, 13-15 April.
3. **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 presented at the SPE International Symposium on Oilfield Chemistry held in Woodlands, Texas, USA, 13-15 April.

4. Shangwen Zha, Jianjia Yu, **Guoyin Zhang**, Ning Liu and Robert Lee. 2015. Polyethersulfone (PES)/Cellulose Acetate Butyrate (CAB) Hybrid Hollow Fiber Membranes for Organic Matter Removal from Produced Water. Paper SPE 173787 presented at the SPE International Symposium on Oilfield Chemistry held in The Woodlands, Texas, USA, 13–15 April.
5. **Zhang, G** and Seright, R.S. 2013. Effect of Concentration on HPAM Retention in Porous Media. SPE 166265 presented at SPE Annual Technical Conference and Exhibition in New Orleans, Louisiana, 30 September–2 October.
6. Kamaraj, K., SPE, **Zhang, G.**, Liu, Y., and Seright, R.S. 2011. Effect of Residual Oil Saturation on Recovery Efficiency during Polymer Flooding of Viscous Oils. OCT 22040 presented at Arctic Technology Conference, Houston, TX. 7-9 February. <http://dx.doi.org/10.4043/22040-MS>.
7. Wang, H., Yao, S., **Zhang, G.**, and Zhu, H. 2010. The Interfacial Activity, the Properties Of Adsorption And Emulsification Of Petroleum Sulfonate/Alkylbenzene Sulfonate/Alkaline Compound System. Paper presented at International Conference on Surfactant & Detergent. Shanghai, China, 13-15 April.
8. **Zhang, G** and Seright, R.S. 2007. Conformance and Mobility Control: Foams vs. Polymers. Paper SPE 105907 presented at the International Symposium on Oilfield Chemistry, Houston, TX, 28 February-2 March. <http://dx.doi.org/10.2118/105907-MS>.
9. Wu, X., **Zhang, G.**, Shan, C., and Wang, H. 2007. Technical Progress of EOR Surfactant in the Daqing Oilfield. Paper presented at the National Symposium on Oilfield Chemical Development and Application. Urumqi, Xinjiang, 16–20 September.
10. Guo, W., Yang, Z., Wu, X., **Zhang, G.**, and Zhou, S. 2005. Synthesis and Application of Weak-Alkali Alkylbenzene Sulfonates with Single-component to Daqing Oilfield EOR Processes. Paper presented at Chinese Petroleum Society Oil and Gas Field Development Conference. Qingdao, Shandong, 3-6 September.
11. Wu, X., Liu, Q., **Zhang, G.**, Yang, Y., and Shan, C. 2006. New EOR Surfactants Suitable for Weak Alkali. Paper presented at 2006 International Conference on Surfactant & Detergent held in Shanghai, China, 16-19 August.
12. **Zhang, G.**, Xu, Y., Liu, Q., and Zong, L. 2005. Application of High-performance Alkylbenzene Sulfonates to Daqing EOR. Paper presented at the National Symposium on Enhanced Oil Recovery. Beijing, December.
13. Wu, X., **Zhang, G.**, Wang, H., Yang, Y., Gao, C., Chen, G., and Li, H. 2004. Application of Heavy Alkylbenzene Sulfonate Surfactants to Daqing ASP Pilot Test. The 3<sup>rd</sup> National Symposium on SO<sub>3</sub> Sulfonation/sulfation, Xiamen, Fujian, 21-24 September.

## Research Projects

1. Testing of Cairn's Existing ASP Formulation for Mangala Field & Evaluating Suitability and Commercial Implications of Any Other Alternative Formulation. Nov. 2014 to Oct. 2015, Cairn India. **PI**.
2. Development of Chemical-Enhanced Oil-Phase Recovery Formulation for Subsurface Remediation. InfraSUR, LLC. **PI**.

3. Live Oil Reservoir Core Flood Using Suggested ASP Formulations. Mar 2017 to Jul 2017, Cairn India. **PI.**
4. Formulation of High-Performance ASP Surfactants for the Daqing Oilfield. March 2017 to February 2019, Shandong GINZRE New Material Development Co., Ltd. **PI.**
5. Optimization of Daqing ASP Surfactant Formulation Using Phase Behavior Tests. March 2019 to December 2020. Beijing Huamei Inc. CNPC. **PI.**

#### **Courses Taught**

- Enhanced Oil Recovery: ASP Flooding.
- Produced Water Treatment: Theory and Practices.