

**THE UNIVERSITY OF TEXAS AT AUSTIN
Cockrell School of Engineering**

FULL NAME: Mojdeh Delshad **TITLE:** Research Associate Professor

DEPARTMENT: Petroleum and Geosystems Engineering

DATE OF BIRTH: 05/06/1955

CITIZENSHIP: U.S.

EDUCATION:

Sharif University, Tehran, Iran	Chemical Engineering	B.S.	1978
The University of Texas at Austin	Petroleum Engineering	M.S.	1981
The University of Texas at Austin	Petroleum Engineering	Ph.D.	1986

PROFESSIONAL REGISTRATION: Texas

CURRENT AND PREVIOUS ACADEMIC POSITIONS:

The University of Texas at Austin	Research Associate Professor	Fall 2005 - present
The University of Texas at Austin	Assistant Director of the DOE Center for Frontiers of Subsurface Energy Security (CFSES).	Aug 2009 - present
The University of Texas at Austin	Research Engineer	1995 - 2005
The University of Texas at Austin	Research Associate	1991- 1995
The University of Texas at Austin	Postdoctoral Fellow	1987 - 1991
The University of Texas at Austin	Postdoctoral Research Associate	1986 - 1987

OTHER PROFESSIONAL EXPERIENCE:

INTERA Technologies	Project Engineer	Jan. 1986-Aug.1986
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CONSULTING:

Total	Jan 2008 - current
Innovative Petrotech Solutions Inc	Jan 2008 - current
Shell Oil Company	Feb. 2006 - March 2006
Chevron ETC	Dec. 2005 - Dec. 2006
BP Exploration and Production	Jan. 2006 - May 2006
Chevron ETC	Dec. 2004 - Dec. 2005
Innovative Petrotech Solutions Inc	Nov. 2005 - Jan 2006
Total	March 2005 - June 2005
Burlington Oil and Gas Company	Sept. 2004 - Jan. 2005
ConocoPhillips	Oct. 2003 - Dec. 2003
Innovative Petrotech Solutions, Inc	Sept. 2003 - Oct. 2003
ExxonMobil	Jan. 2002 - Dec. 2002
HydroGeoLogic, Inc.	March 2002 - May 2002
Elf Exploration and Production	Dec. 1999 - April 2000
M&S Engineering	Dec. 1998 - March 1999

HONORS AND AWARDS:

- “A Peer Apart” Rank from SPE for reviewing more than 100 papers, August 2010
- Outstanding SPE Technical Editor, Oct. 2003
- 2004 Award for best paper in Petrophysics, "Assessment of in-situ hydrocarbon saturation in the presence of deep invasion and highly saline connate water" with C. Verdin

MEMBERSHIPS IN PROFESSIONAL AND HONORARY SOCIETIES:

- Society of Petroleum Engineering (SPE)
- Pi Epsilon Tau
- National Groundwater Association
- SIAM

UNIVERSITY COMMITTEE ASSIGNMENTS:

Departmental- Assistant Director of the DOE Center for Frontiers of Subsurface Energy Security (CFSES) July 2009 - present

College-

University-

PROFESSIONAL SOCIETY AND MAJOR GOVERNMENTAL COMMITTEES:

- Member of SPE’s Books Development Committee (Sept. 2010 - Sept. 2013)
- Associate Executive Editor for SPE Journal of Reservoir Evaluation and Engineering (2005 - present)
- SPE Technical Editor (2001 - present)
- Technical editor for *Journal of Transport in Porous Media*
- Technical editor for *Fuel and Energy Journal*
- Technical editor for *Journal of Computational Geosciences*
- Technical editor for *Journal of Canadian Petroleum Technology*
- *Technical Editor for Journal of Environmental Science and Technology*
- Session Chair at the SPE/IOR Conference, Tulsa, OK, 2001

COMMUNITY ACTIVITIES:

- Technical reviewer for Graduate and Industry Networking Conference, 2008 - 2010
- Outreach workshop for high school science and math teachers and students, Austin, Texas, June 15-16, 2010

PUBLICATIONS:

A. Refereed Archival Journal Publications

1. C. Yuan, M. Delshad, and M.F. Wheeler, "Modeling Multiphase Non-Newtonian Polymer Flow in IPARS Parallel Framework," American Institute of Mathematical Sciences, Networks and Heterogeneous Media, Vol. 5, No. 3, September 2010, p. 583-602.
2. **M. Delshad**, M.F. Wheeler, S.G. Thomas, "Parallel Numerical Reservoir Simulations of Non-Isothermal Compositional Flow and Chemistry," SPE paper 118847, the 2009 SPE Reservoir Simulation Symposium, Houston, TX, Feb 2-4, accepted for SPE Journal., April 2010.
3. K. Rai, R.T. Johns, L.W. Lake, and M. Delshad, "Oil Recovery Predictions for Surfactant Polymer Flooding," SPE paper 124001 presented at the 2009 SPE Annual Technical; Conference and Exhibition, New Orleans, LA, Oct 4-7, accepted for publication in SPE Journal.
4. N. Fathi Najafabadi, M. Delshad, Q.P. Nguyen, and J. Zhang, "Wettability Modification of Fractured Carbonates Using Sodium Metaborate: Part I: Laboratory Results and Simulation Procedure," Accepted for publication, Journal of Petroleum Science and Technology, 2010, in Press.
5. N. Fathi Najafabadi, M. Delshad, A. Farhadinia, and K. Sepehrnoori, "Wettability Modification of Fractured Carbonates Using Sodium Metaborate: Part II: History Match Results and Sensitivity Simulations," Accepted for publication, Journal of Petroleum Science and Technology, 2010, in Press.
6. M.A., Farhadinia, S.L., Bryant, K., Sepehrnoori, and, M., Delshad, "Development and Implementation of a Multidimensional Reservoir Souring Module in a Chemical Flooding Simulator," Journal of Petroleum Science and Technology, 28:535-546, 2010.
7. M.A., Farhadinia, S.L., Bryant, K., Sepehrnoori, and, M., Delshad, "Application of A 3-D Reservoir Simulator with Biodegradation Capability to Evaluate Reservoir Souring Predictive Models," Journal of Petroleum Science and Technology, 28:382-392, 2010.
8. B. Liang, K. Sepehrnoori, and M. Delshad, "An Automatic History Matching Module with Distributed and Parallel Computing," Journal of Petroleum Science and Technology, **27**, 2009, 1092-1108.
9. B. Liang, K. Sepehrnoori, and M. Delshad, "A weighted Ensemble Kalman Filter for Automatic History Matching," Journal of Petroleum Science and Technology, **27**, 2009, 1062-1091.
10. H. Mohammadi, M. Delshad, and G.A. Pope, "Mechanistic Modeling of Alkaline/Surfactant/Polymer Floods," SPE Reservoir Evaluation and Engineering Journal, Aug. 2009, 518-570.
11. **M. Delshad**, N. Fathi Najafabadi, and K. Sepehrnoori, "Scale up Methodology for Wettability Modification in Fractured Carbonates," SPE paper 118915, Revisions submitted for Publication in SPE Reservoir Engineering, 2010.
12. **M. Delshad**, N. Najafabadi Fathi, G. Anderson, G. A. Pope, and K. Sepehrnoori, "Modeling Wettability Alteration by Surfactants in Naturally Fractured Reservoirs," SPE Reservoir Evaluation and Engineering Journal, June 2009, p. 361-370.
13. C. Han, M. Delshad, G.A. Pope, and K. Sepehrnoori, "Coupling Equation of State Compositional and Surfactant Models in A Fully Implicit Parallel Reservoir Simulator Using Equivalent Alkane Carbon Number Concept," SPE Journal, June 2009, p. 302-310.
14. J. Zhang, M. Delshad, K. Sepehrnoori, "Development of a Framework for Optimization of Reservoir Simulation Studies," Journal of Petroleum Science and Engineering, **59**, 2007, 135-146.
15. C. Han, M. Delshad, K. Sepehrnoori, and G.A. Pope, "A Fully Implicit, parallel, Compositional Chemical Flooding Simulator," SPE Journal, September 2007, 322-338.
16. A. John, C. Han, M. Delshad, G.A. Pope, and K. Sepehrnoori, "A New Generation Chemical Flooding Simulator," SPE Reservoir Evaluation and Engineering, 2005, **10** (2), June 2005, 206-127.
17. **M. Delshad**, R.J. Lenhard, M. Oostrom, and G.A. Pope, "A Mixed-wet hysteresis relative Permeability and Capillary Pressure Model for Reservoir Simulations," SPE Reservoir Evaluation and Engineering, October 2003, 328-334.

18. L. Cheng, S.I. Kam, M. Delshad, and W.R. Rossen, "Simulation of Dynamic Foam-Acid Diversion Processes," *SPE Journal*, September 2002, 316-324.
 19. G.A. Pope, W. Wu, G. Narayanaswamy, M. Delshad, M.M. Sharma, and P. Wang "Modeling Relative Permeability Effects in Gas-Condensate Reservoirs," *SPE Reservoir Eval. & Eng.*, **3** (2), April 2000, 1-8.
 20. W. Wu, P. Wang, M. Delshad, C. Wang, G. Pope and M. Sharma, "Modeling Non-Equilibrium Mass Transfer Effects for a Gas Condensate Field," *In Situ*, **24** (2&3), 2000, 136-161.
 21. W. Wu, M. Delshad, T. Oolman, and G.A. Pope, "Remedial Options for Creosote-Contaminated Sites," *Ground Water Monitoring & Remediation*, Spring 2000, 78-86.
 22. G.M. Edwards, M. Delshad, G.A. Pope, and K. Sepehrnoori, "A High Resolution Method Coupled with Local Refinement for Three Dimensional Aquifer Remediation," *In Situ J.*, **23** (4), 1999, 333-377.
 23. **M. Delshad**, W. Han, G.A. Pope, K. Sepehrnoori, W. Wu, R. Yang, and L. Zhao, "Alkaline/Surfactant/Polymer Flood Predictions for the Karamay Oil Field," *J. of Petroleum Technology* **51** (1), 34-35, January, 1999, 34-35.
 24. C.L. Brown, M. Delshad, V. Dwarakanath, D.M. McKinney, G.A. Pope, R.E. Jackson, J.T. Londergan, H.W. Meinardus, W.H. Wade, "Demonstration of Surfactant Flooding of an Alluvial Aquifer Contaminated with DNAPL," in *Innovative Subsurface Remediation: Field Testing of Physical, Chemical, and Characterization Technologies*, M. Brusseau, M. Annable, and J. Gierke (eds.) ACS Symposium Series 725, American Chemical Society, Washington, DC, 1999, 64-85.
 25. **M. Delshad**, G.A. Pope, and K. Sepehrnoori, "A Compositional Simulator for Modeling Surfactant Enhanced Aquifer Remediation, 1. Formulation," *J. of Contaminant Hydrology* **23**, November 1996, 303-327.
 26. P.C. de Blanc, D.C. McKinney, G.E. Speitel, K. Sepehrnoori, and M. Delshad, "A three-dimensional, Multi-Component, Model of Non-Aqueous Phase Liquid Flow and Biodegradation in Porous Media," *Non-Aqueous Phase Liquids in Subsurface Environment: Assessment and Remediation*, Lakshmi N. Reddi, ed., ASCE, NY, 1996, 478-489.
 27. M. Jin, M. Delshad, V. Dwarakanath, D.C. McKinney, G.A. Pope, K. Sepehrnoori, C.E. Tilburg, and R.E. Jackson, "Partitioning Tracer Test for Detection, Estimation, and Remediation Performance Assessment of Subsurface Non-Aqueous Phase Liquids," *Water Resources Research*, **31** (5), 1201-1211, May 1995.
 28. J. Liu, M. Delshad, G.A. Pope, and K. Sepehrnoori, "Application of Higher-Order Flux-Limited Methods in Compositional Simulation," *Transport in Porous Media*, **16** (1), 1-29, July 1994.
 29. **M. Delshad** and G.A. Pope, "Comparison of the Three-Phase Oil Relative Permeability Models," *J. of Transport in Porous Media*, **4**, 59-83, 1989.
 30. J.C. Smith, M. Delshad, G.A. Pope, W.G. Anderson, and D. Marcel, "Analysis of Unsteady-State Displacements Using a Capacitance-Dispersion Model," *In Situ J.*, **12** (1 & 2), 41-78, 1988.
 31. **M. Delshad**, M. Delshad, G.A. Pope, and L.W. Lake, "Two- and Three-Phase Relative Permeabilities of Micellar Fluids," *SPE Formation Evaluation*, 327-337, September 1987.
 32. **M. Delshad**, D.J. MacAllister, G.A. Pope, and B.A. Rouse, "Multiphase Dispersion and Relative Permeability Experiments," *Society of Petroleum Engineering J.*, 524-534, August 1985.
- B. Refereed Conference Proceedings**
1. F.K. Veedu, M. Delshad, and G.A. Pope, "Scaleup Methodology for Chemical Flooding," SPE 135543 prepared for the 2010 SPE Annual Technical Conference and Exhibition, Florence, Italy, 19-122, Sept. 2010.
 2. **M. Delshad**, M.F. Wheeler, and X. Kong, "A Critical Assessment of CO₂ Injection Strategies in Saline Aquifers," SPE 132442 prepared for the SPE Western Regional Meeting, Anaheim, CA, May 27-29, 2010.
 3. C. Yuan, M. Delshad, and M.F. Wheeler, "Parallel Simulations of Commercial-Scale Polymer Floods," SPE 132441 prepared for the SPE Western Regional Meeting, Anaheim, CA, May 27-29, 2010.

4. M.F. Wheeler, M. Delshad, X. Kong, S. Thomas, T. Wildey, and G. Xue, "Role of Computational Science in Protecting the Environment: Geological Storage of CO₂," Proceedings of the International Congress of Mathematics, Hyderabad, India, June 2010.
5. M.A. Farhadinia and M. Delshad, "Modeling and Assessment of Wettability Alteration Processes in Fractured Carbonates using Dual Porosity and Discrete Fracture Approaches," SPE 129749 prepared for the 2010 SPE Improved Oil Recovery Symposium, Tulsa, O.K, April 24-28, 2010.
6. Y. Abbasi, G.A. Pope, and M. Delshad, "Mechanistic Modeling of Chemical Transport in Naturally Fractured Oil Reservoirs," SPE 129661 prepared for the 2010 SPE Improved Oil Recovery Symposium, Tulsa, O.K, April 24-28, 2010.
7. K. Rai, R.T. Johns, L.W. Lake, and M. Delshad, "Oil Recovery Predictions for Surfactant Polymer Flooding," SPE paper 124001 presented at the 2009 SPE Annual Technical Conference and Exhibition, New Orleans, LA, Oct 4-7.
8. L. Kaprinski, C. Marcondes, M. Delshad, and K. Sepehrnoori, "An Element Based Conservative Approach using Unstructured Grids in Conjunction with a Chemical Flooding Compositional Reservoir Simulator," Proceedings of COBEM 2009, 20th International Congress of Mechanical Engineering, Nov. 15-2009, Gramado, Brazil.
9. M. Abbaszadeh, K. Okatsu, A. Farhadinia, M. Delshad, and G.A. Pope, "Screening Study of Chemical EOR Flooding in the Chicontepec Field," paper proceeding presented at the Mexican Petroleum Congress, Veracruz, June 10-14, 2009
10. **M. Delshad**, N. Fathi Najafabadi, and K. Sepehrnoori, "Scale up Methodology for Wettability Modification in Fractured Carbonates," SPE paper 118915, Presented at the 2009 SPE Reservoir Simulation Symposium, Houston, TX, Feb 2-4.
11. M.A. Farhadinia, S.L. Bryant, K. Sepehrnoori, and M. Delshad, "Development of a Reservoir Simulator for Reservoir Souring Predictions," SPE paper 118951 Presented at the 2009 SPE Reservoir Simulation Symposium, Houston, TX, Feb 2-4.
12. N. Fathi Najafabadi, C. Han, M. Delshad, and K. Sepehrnoori, "Development of a Three-Phase, Fully Implicit, Parallel Chemical Flood Simulator," SPE paper 119002, the 2009 SPE Reservoir Simulation Symposium, Houston, TX, Feb 2-4.
13. S.G. Thomas, M.F. Wheeler, M. Delshad, "Parallel Numerical Reservoir Simulations of Non-Isothermal Compositional Flow and Chemistry," SPE paper 118847, the 2009 SPE Reservoir Simulation Symposium, Houston, TX, Feb 2-4.
14. **M. Delshad**, D.H. Kim, O.A. Magbagbeola, C. Huh, G.A. Pope, and F. Tarahhom, "Mechanistic Interpretation and utilization of Viscoelastic Behavior of Polymer Solutions for Improved Polymer-Flood Efficiency," SPE paper 113620, the 2008 SPE Improved Oil Recovery Symposium, Tulsa, OK, April 19-23.
15. H. Mohammadi, M. Delshad, and G.A. Pope, "Mechanistic Modeling of Alkaline/Surfactant/Polymer Floods," SPE paper 110212, the 2008 SPE Improved Oil Recovery Symposium, Tulsa, OK, April 19-23.
16. N. Fathi Najafabadi, M. Delshad, K. Sepehrnoori, Q.P. Nguyen, and J. Zhang, "Chemical Flooding of Fractured Carbonates Using Wettability Modifiers," SPE paper 113369, the 2008 SPE Improved Oil Recovery Symposium, Tulsa, OK, April 19-23.
17. M. Delshad, S.G. Thomas, and M.F. Wheeler, "Large scale Parallel Simulations of CO₂ Sequestration using a Thermal Compositional Simulator," Tera Grid Proceeding, Las Vegas, NV, May 2008.
18. S.G. Thomas, M.F. Wheeler, and M. Delshad, "Modeling CO₂ Sequestration Using A Sequentially Coupled Iterative-IMPEC-Time-Split-Thermal Compositional Simulator," presented at the 11th European Conference on the Mathematics of Oil Recovery, Bergen, Norway, September 8-11, 2008.
19. **M. Delshad**, S.G. Thomas, and M.F. Wheeler, "Parallel Simulations of CO₂ Sequestration Using A Non-Isothermal Compositional Model," presented at ASME 2008 International Mechanical Engineering Congress & Exposition, Boston, MA, Oct. 31 - Nov. 6, 2008.

20. B. Liang, F.O. Alpak, K. Sepehrnoori, and M. Delshad, "A Singular Evolutive Interpolated Kalman Filter for Rapid Uncertainty Quantification," SPE paper 106170, presented at the 2007 SPE Reservoir Simulation Symposium, Houston, Texas, Feb. 26-28.
21. R. Naimi-Tajdar, M. Delshad, and K. Sepehrnoori, "Matrix Subgridding and Its Effect in Dual Porosity Simulators," paper IPTC 11195, presented at the 2007 International Petroleum Technology Conference, Dubai, U.A.E, December 4-6.
22. **M. Delshad**, N. Fathi, G.A. Anderson, G.A. Pope, and K. Sepehrnoori, "Modeling Wettability Alteration in Naturally Fractured Reservoirs," SPE paper 100081 presented at the 2006 SPE/DOE Symposium on Improved Oil Recovery, Tulsa, Oklahoma, April 22-26, 2006, P. 1-10.
23. G. Anderson, M. Delshad, C.B. King, H. Mohammadi, G.A. Pope, "Optimization of Chemical Flooding in a Mixed-Wet Dolomite Reservoir," SPE paper 100082 presented at the 2006 SPE/DOE Symposium on Improved Oil Recovery, Tulsa, Oklahoma, April 22-26, 2006, P. 1-12.
24. J. Zhang, M. Delshad, K. Sepehrnoori, G.A. Pope, "An Efficient Reservoir Simulation Approach to Design and Optimize Improved Oil Recovery Processes with Distributed Computing," SPE paper 94733 presented at the 2005 SPE Latin American and Caribbean Petroleum Engineering Conference, Rio De Janeiro, Brazil, June 20-23, 2005, P 1-14.
25. J. Zhang, M. Delshad, K. Sepehrnoori, "A Framework to Design and Optimize Surfactant-Enhanced Aquifer Remediation," SPE paper 94222 -STU presented at the 2005 SPE/EPA/DOE Exploration & Production Environmental Conference, Galveston, Houston, 7-9 March 2005, P. 1-17.
26. A. John, C. Han, M. Delshad, G.A. Pope, and K. Sepehrnoori, "A New Generation Chemical Flooding Simulator," SPE paper 89436 presented at the 2004 SPE/DOE 14th Symposium on Improved Oil recovery, Tulsa, O.K, April, 17-21, 2004, P 1-13.
27. B.K. George, C. Torres-Verdin, M. Delshad, R. Sigal, F. Zouioueche, B. Anderson, "A Case Study Integrating the Physics of Mud Filtrate Invasion with the Physics of Induction Logging: Assessment of In-Situ Hydrocarbon Saturation in the Presence of Deep Invasion and Highly Saline Connate Water," paper to be presented at the 44th Annual Logging Symposium, Society of Professional Well Log Analysis, Galveston, Texas, June 22-25, 2003, P 141-136.
28. **M. Delshad** and G.A. Pope, "Effect of Dispersion on Transport and Precipitation of Barium and Sulfate in Oil Reservoirs," SPE paper 80253 presented at the SPE International Symposium on Oilfield Chemistry, Houston, Texas, 5-8 February 2003, P. 1-8.
29. **M. Delshad**, G.A. Pope, K. Sepehrnoori, and N.E. Deeds, "Simulation of Fate and Transport of NAPLs in Fractured Media," Proceedings of the third International Conference on Remediation of Chlorinated and Recalcitrant Compounds, Monterey, California, May 2002, P. 1-8.
30. **M. Delshad**, G.A. Pope, K. Asakawa, and K. Sepehrnoori, "Simulations of Chemical and Microbial Enhanced Oil Recovery Methods," SPE paper 75237 presented at the SPE/DOE Thirteenth Symposium on Improved Oil Recovery, Tulsa, OK, April 13-17, 2002, P. 1-13.
31. **M. Delshad**, G.A. Pope, and K. Sepehrnoori, "Simulations of Chemical and Microbial Enhanced Oil Recovery Methods," Proceeding of the 22nd Annual Workshop & Symposium, Collaborative Project on Enhanced Oil Recovery International Energy Agency, Sept. 9-12, 2001, P. 1-13.
32. J. Wu, C. Torres-Verdin, K. Sepehrnoori, and M. Delshad, "Numerical Simulation of Mud Filtrate Invasion in Deviated Wells," SPE paper 71739 presented at the 2001 Annual Technical Conference, New Orleans, Louisiana, Sept. 30-Oct. 3, 2001, P. 1-15.
33. B. Guler, P. Wang, M. Delshad, G.A. Pope, and K. Sepehrnoori, "Three- and Four-Phase Flow Compositional Simulations of CO₂/NGL EOR," SPE 71485 prepared for the 2001 Annual Technical Conference, New Orleans, Louisiana, Sept. 30-Oct. 3, 2001, P. 1-9.
34. L. Cheng, S.I. Kam, M. Delshad, and W.R. Rossen, "Simulation of Dynamic Foam-Acid Diversion Processes," SPE 68916 Proceedings of the SPE European Formation Damage Conference held in Hague, Netherlands, May 21-22, 2001, P. 1-18.

35. G.A. Pope, V. Dwarakanath, and M. Delshad, "Surfactant Enhanced Aquifer Remediation (SEAR)," Prague, P. 1-17.
36. **M. Delshad**, G.A. Pope, L. Yeh, and F. Holzmer, "Design of the Surfactant Flood at Camp Lejeune," Proceedings of the Second International Conference on Remediation of Chlorinated and Recalcitrant Compounds, Monterey, California, May 22-25, 2000, P. 1-8.
37. **M. Delshad**, R.J. Lenhard, M. Oostrom, G.A. Pope, and S. Yang, "A Mixed-Wet Hysteretic Relative Permeability and Capillary Pressure Model in a Chemical Compositional Reservoir Simulator," SPE 51891 Proceedings of the 1999 SPE Reservoir Simulation Symposium, Houston, TX, 14-17 February, P. 1-17.
38. V. Dwarakanath, M. Delshad, and G.A. Pope, "Effect of Nonequilibrium Mass Transfer on the Response and Analysis of Partitioning Interwell Tracer Tests," Proceedings of the 1998 AGU Fall Meeting, San Francisco, CA, 6-10 December, P. 1-2.
39. G.A. Pope, W. Wu, G. Narayanaswamy, M. Delshad, M. Sharma, P. Wang, "Modeling Relative Permeability Effects in Gas-Condensate Reservoirs," SPE 49266 Proceedings of the 1998 SPE Annual Technical Conference and Exhibition, New Orleans, LA, 27-30 September, P. 1-8.
40. **M. Delshad**, W. Han, G. A. Pope, K. Sepehrnoori, W. Wu, R. Yang, and Z. Zhao, "Alkaline/Surfactant Polymer Flood Predictions for the Karamay Oil Field," SPE 39610 Proceedings of the 1998 SPE/DOE Improved Oil Recovery Symposium, Tulsa, OK, April, P. 65-77.
41. M. Oostrom, R.J. Lenhard, M. Delshad, and S.D. Robertson, "Modeling Relations Among Relative Permeabilities, Fluid Saturations, and Capillary Pressures in Mixed-Wet Porous Media: Model Testing and Application to Oil-Water Systems," Proceedings of International Workshop on Characterization and Measurement of Hydraulic Properties of Porous Media, Riverside, Oct. 22-24, 1997, P. 1-18.
42. M. Edwards, G.A. Pope, K. Sepehrnoori and M. Delshad, "Local Grid Refinement Discretization - Towards Three Dimensional Reservoir Simulation," Proceedings of the Symposium on Advanced Simulation of Subsurface Flow and Contaminant Transport, Research Triangle Park, NC, December 5-6, 1996, P. 1-18.
43. M. Rame, M. Delshad, "A Compositional Reservoir Simulator on Distributed Memory Parallel Computers," SPE 29103 Proceedings of the SPE Symposium on Reservoir Simulation, San Antonio, TX, Feb. 12-15, 1995, P. 1-10.
44. W. Wu, A. Vaskas, M. Delshad, G.A. Pope, and K. Sepehrnoori, "Design and Optimization of Low-Cost Chemical Flooding," Proceedings of the SPE/DOE Tenth Symposium on Improved Oil Recovery, Tulsa, OK, April 21-24, 1996, P. 1-6.
45. C. Brown, M. Delshad, V. Dwarakanath, D.C. McKinney, and G.A. Pope, "Design of A Field-scale Surfactant Enhanced Remediation of a DNAPL Contaminated Aquifer," Proceeding of the I&EC special symposium of American Chemical Society, Birmingham, AL, Sept. 9-12, 1996, P. 1-6.
46. H. Dakhliya, W. Wu, M.T. Lim, M. Delshad, G.A. Pope, and K. Sepehrnoori, "Simulation of Surfactant Flooding Using Horizontal Wells," Proceedings of the Petroleum Society of CIM 46th Annual Technical Meeting, Banff, Canada, May 14-17, 1995, P. 1-9.
47. G.A. Pope, K. Sepehrnoori, M. Delshad, H. Bendakhliya, S. Sinha, W. Wu, "Optimization of Surfactant Flooding to Reduce Cost and Risk," Proceedings of the 1994 IEA Workshop/Symposium on EOR, Stavanger, Norway, August 28-31, P. 1-10.
48. M. Jin, M. Delshad, D.C. McKinney, G.A. Pope, K. Sepehrnoori, C. Tilburg, and R.E. Jackson, "Subsurface NAPL Contamination: Partitioning Tracer Test for Detection, Estimation, and Remediation Performance Assessment," Proceedings of the Annual Meeting of the American Institute of Hydrology, April 10-13, 1994, P. 1201-1211.
49. L.E.A. Ferreira, F. Descant, M. Delshad, G.A. Pope, and K. Sepehrnoori, "A Single-Well Tracer Test to Estimate Wettability," Proceedings of the SPE/DOE 8th Symposium on Enhanced Oil Recovery, Tulsa, OK, April 22-24, 1992, P. 325-335.
50. **M. Delshad**, G.A. Pope, and K. Sepehrnoori, "An Overview of the Research at The University of Texas on Both Physical and Computational Problems of Large-Scale Chemical Enhanced Oil Recovery Simulation," Proceedings of the International Energy Agency meeting on Enhanced Oil Recovery, Hanover, West Germany,

September 13-21, 1986, P. 1-30.

51. **M. Delshad**, M. Delshad, D. Bhuyan, G.A. Pope, and L.W. Lake, "Effect of Capillary Number on the Residual Saturation of a Three-Phase Micellar Solution," Proceedings of the SPE/DOE Fifth Symposium on Enhanced Oil Recovery, Tulsa, OK, April 20-23, 1986, P. 399-405.

C. Other Major Publications

"UTCHEM User's Manual," The Center for Petroleum and Geosystems Engineering, 2000.

"UTCHEM Technical Manual," The Center for Petroleum and Geosystems Engineering, 2000.

D. Books, Chapters of Books; Editor of Books

1. "A Primer of Enhanced Oil Recovery," Coauthored with L.W. Lake, under contract with Petroleum Extension Service (PETEX), 2010.
2. Chapter 6 of the SEAR (Surfactant Enhanced Aquifer Remediation) Design Manual, prepared for Naval Facilities Engineering Command (NFESC), Washington, DC, April 2003.

E. Copyright

"UTCHEM - The University of Texas Chemical Compositional Simulator"

F. Technical Reports

1. "Computational Models for Evaluating Long Term CO₂ Storage in Saline Aquifers," National Science Foundation, CDI-Type II, with M.F. Wheeler, T. Arbogast, 2nd Annual report 10/2009-9/2010.
2. "Center for Frontiers of Subsurface Energy," DOE-BES, Award DE-SC0001114, 2010 Annual Report, April 2010.
3. "Center for Frontiers of Subsurface Energy," DOE-BES, Award DE-SC0001114, 2010 Management Report, April 2010.
4. "EOR Studies for the PEMEX E&P North-East Marine Region Fields, PEMEX," Monthly and semiannual reports, Jan. 1, 2009- Dec., 2010.
5. "Computational Models for Evaluating Long Term CO₂ Storage in saline Aquifers," Final report for King Abdullah University of Science and Technology Research Project, with M.F. Wheeler, and T. Arbogast, March 15, 2010.
6. "Computational Models for Evaluating Long Term CO₂ Storage in Saline Aquifers," National Science Foundation, CDI-Type II, with M.F. Wheeler, T. Arbogast, Annual report 10/2008-9/2009.
7. "Test Sets for Air/Water Flow in Porous Media," Department of Defense High performance Computing Modernization Program, with C. Yuan, M. Wheeler, Oct. 17, 2008.
8. "Unstructured Grid Flow and Transport Models," Department of Defense High performance Computing Modernization Program, with C. Dawson, M. Wheeler, C. Yuan, July 25, 2008.
9. "A Framework to Design and Optimize Chemical Flooding Processes," with G.A. Pope and K. Sepehrnoori. In the third and final annual report for the Department of Energy, Contract No. DE-FC-26-03NT15412, period of Sept.1, 2004 through Aug. 31, 2006.
10. "Modeling Wettability Alteration using Chemical EOR Process in Naturally Fractured Reservoirs," with G. A. Pope and K. Sepehrnoori. In the third semi-annual report for the Department of Energy, Contract No. DE-FC-26-04NT15529, period of September 2005 through Feb. 2006.
11. "A Framework to Design and Optimize Chemical Flooding Processes," with G.A. Pope and K. Sepehrnoori. In the second annual report for the Department of Energy, Contract No. DE-FC-26-03NT15412, period of Sept.1, 2005 through Aug. 31, 2005.
12. "Modeling Wettability Alteration using Chemical EOR Process in Naturally Fractured Reservoirs," with G. A. Pope and K. Sepehrnoori. In the second semi-annual report for the Department of Energy, Contract No.

- DE-FC-26-04NT15529, period of March 2005 through August. 2005.
13. "A Framework to Design and Optimize Chemical Flooding Processes," with G.A. Pope and K. Sepehrnoori. In the first annual report for the Department of Energy, Contract No. DE-FC-26-03NT15412, period of Sept.1, 2004 through Aug. 31, 2005.
 14. "Modeling Wettability Alteration using Chemical EOR Process in Naturally Fractured Reservoirs," with G. A. Pope and K. Sepehrnoori. In the first semi-annual report for the Department of Energy, Contract No. DE-FC-26-04NT15529, period of Oct. 2004 through Feb. 2005.
 15. "A Framework to Design and Optimize Chemical Flooding Processes," with G. A. Pope and K. Sepehrnoori. In the second annual report for the Department of Energy, Contract No. DE-FC-26-03NT15412, period of August 31, 2003 through November 29, 2004.
 16. "A New Generation Chemical Flooding Simulator," with G.A. Pope and K. Sepehrnoori. In the final report for the Department of Energy, Contract No. DE-FC-26-00BC15314, January 2005.
 17. "Feasibility of Surfactant Flood for Cedar Hills Field: Phase II," prepared for Burlington oil and Gas Company, Jan. 2005.
 18. "A Framework to Design and Optimize Chemical Flooding Processes," with G.A. Pope and K. Sepehrnoori. In the first annual report for the Department of Energy, Contract No. DE-FC-26-03NT15412, November 2004.
 19. "Feasibility of Surfactant Flood for Cedar Hills Field: Phase I," prepared for Burlington oil and Gas Company, Sept. 2004.
 20. "A New Generation Chemical Flooding Simulator," with G.A. Pope and K. Sepehrnoori. In the fifth semiannual report for the Department of Energy, Contract No. DE-FC-26-00BC15314, March 2004.
 21. "Modeling Flow and distribution of CO₂/H₂S Mixture in a Reservoir," with G.A. Pope prepared for ConocoPhillips, Dec. 2003.
 22. "A New Generation Chemical Flooding Simulator," with G.A. Pope and K. Sepehrnoori. In the fourth semiannual report for the Department of Energy, Contract No. DE-FC-26-00BC15314, Sept. 2003.
 23. "A New Generation Chemical Flooding Simulator," with Gary A. Pope and K. Sepehrnoori. In the third semiannual report for the Department of Energy, Contract No. DE-FC-26-00BC15314, March 2003.
 24. "A New Generation Chemical Flooding Simulator," with Gary A. Pope and K. Sepehrnoori. In the second semiannual report for the Department of Energy, Contract No. DE-FC-26-00BC15314, Sept. 2002.
 25. "A New Generation Chemical Flooding Simulator," with Gary A. Pope and K. Sepehrnoori. In the first semiannual report for the Department of Energy, Contract No. DE-FC-26-00BC15314, Feb 2002.
 26. "Development of an Improved Simulator for Chemical Improved Oil Recovery Processes," with Gary A. Pope and K. Sepehrnoori. In the Final report for the Department of Energy, Contract No. DE-AC26-98BC15109, Sept. 2002.
 27. "Development of an Improved Simulator for Chemical Improved Oil Recovery Processes," with Gary A. Pope and K. Sepehrnoori. In the 2nd Annual report for the Department of Energy, Contract No. DE-AC26-98BC15109, Sept. 2001.
 28. "Foam-Enhanced Sweep in Surfactant Subsurface Remediation," with William Rossen. In the final progress report for the State of Texas Advanced Technology Program, Project No. 003658-0715, Oct. 2002.
 29. "The Role of Rate-Limited Mass Transfer in Surfactant Enhanced Aquifer Remediation," with William Rosen. The final progress report for the State of Texas Advanced Research Program, Project No. 003699-1999, Oct. 2002.
 30. "Multiscale Modeling and Simulation in Scientific Inference: Hierarchical Methods for Parameter Estimation in Porous Flow" with Gary A. Pope and John Trangenstein. In the Third Annual report for the National Science Foundation, Grant No. DMS-9873275, May 2002.
 31. "A Summary of Carbon Dioxide Mitigation Technologies," Prepared for Innovative PetroTech Solutions, Inc, March 2001.

32. "Relative Permeability Behavior for the Description of CO₂ Recovery Processes," Prepared for BPAmoco, Oct. 2000.
33. "Development of an Improved Simulator for Chemical Improved Oil Recovery Processes," with Gary A. Pope and K. Sepehrnoori. In the Annual report for the Strategic Research Projects in the Reservoir Engineering Research Program, Center for Petroleum and Geosystems Engineering, The University of Texas at Austin, March 2000.
34. "Multiscale Modeling and Simulation in Scientific Inference: Hierarchical Methods for Parameter Estimation in Porous Flow" with Gary A. Pope and John Trangenstein. In the First Annual report for the National Science Foundation, Grant No. DMS-9873275, May 2000.
35. "Development of an Improved Simulator for Chemical Improved Oil Recovery Processes," with Gary A. Pope and K. Sepehrnoori. In the 1st Annual report for the Department of Energy, Contract No. DE-AC26-98BC15109, Sept. 2000.
36. "Documentation of UTCHEM Simulations for Design of Surfactant-Enhanced Aquifer Remediation of Site 88 at Marine Corp Base Camp Lejeune, North Carolina," Prepared for Navy Facilities Engineering Service Center, Port Hueneme, CA, Dec. 1999.
37. "Development of an Improved Simulator for Chemical Improved Oil Recovery Processes," with Gary A. Pope and K. Sepehrnoori. In the Annual report for the Strategic Research Projects in the Reservoir Engineering Research Program, Center for Petroleum and Geosystems Engineering, The University of Texas at Austin, March 1999.
38. "Chemical Flooding," with Gary A. Pope and K. Sepehrnoori. In the Fifteenth Annual Report Category C: Process Performance and Design and Formation Evaluation and Stimulation Research, Enhanced Oil and Gas Recovery Research Program, Center for Petroleum and Geosystems Engineering, The University of Texas at Austin, March 1998.
39. "In-Situ Characterization of Dense Non-Aqueous Phase Liquids Using Partitioning Tracers," Annual Report, U.S. Department of Energy, Contract No. DE-FG07-96ER14720, Jan. 1998.
40. "Predicting Well Deliverability in Gas Condensate Reservoirs," Annual Report for Mobil Exploration and Production Technical Center, August 1997.
41. "Chemical Flooding," with Gary A. Pope and K. Sepehrnoori. In the Fourteenth Annual Report Category C: Process Performance and Design and Formation Evaluation and Stimulation Research, Enhanced Oil and Gas Recovery Research Program, Center for Petroleum and Geosystems Engineering, The University of Texas at Austin, March 1997.
42. "Single-Well Wettability Tracer Test Design for Sulimar Queen Field," Center for Enhanced Oil and Gas Recovery Research Annual Report, Category A, March 1997.
43. "Three-Dimensional NAPL Fate and Transport Model," U.S. Environmental Protection Agency, R.S. Kerr Environmental Research Laboratory, final report prepared under cooperative agreement CR-821897, Center for Petroleum and Geosystems Engineering, September 1996.
44. "Development of Cost-Effective Surfactant Flooding Technology," Final Report, U.S. Department of Energy, Contract No. DE-AC22-92BC14885, July 1996.
45. "Chemical Flooding," with Gary A. Pope and K. Sepehrnoori. In the Thirteenth Annual Report Category C: Process Performance and Design and Formation Evaluation and Stimulation Research, Enhanced Oil and Gas Recovery Research Program, Center for Petroleum and Geosystems Engineering, The University of Texas at Austin, March 1996.
46. "Development of Cost-Effective Surfactant Flooding Technology: Second Annual Report," U.S. Department of Energy, Contract No. DE-AC22-92BC14885, DOE/BC/14885-5, Bartlesville, OK, August 1995.
47. "Simulation of Crosslinked Polymer Conformance Treatments," with G.A. Pope and K. Sepehrnoori. In the Twelfth Annual Report, Category C: Process Performance and Design, and Formation Evaluation and Stimulation, Enhanced Oil and Gas Recovery Research Program, Center for Petroleum and Geosystems Engineering, The University of Texas at Austin, March 1995.

48. "Chemical Flooding," with Gary A. Pope and K. Sepehrnoori. In the Twelfth Annual Report, Category C: Process Performance and Design, and Formation Evaluation and Stimulation, Center for Enhanced Oil and Gas Recovery Research, The University of Texas at Austin, March 1995.
49. "Innovative Techniques for the Description of Reservoir Heterogeneity Using Tracers," with G.A. Pope, K. Sepehrnoori, L. Ferreira, A. Datta Gupta, and V. Maroongroge, U.S. Department of Energy, Contract No. DE-AC22-90BC14653, DOE/BC/14653-3, Bartlesville, OK, November 1994.
50. "Development of Cost-Effective Surfactant Flooding Technology: First Annual Report," U.S. Department of Energy, Contract No. DE-AC22-92BC14885, DOE/BC/14885-5, Bartlesville, OK, August 1994.
51. "Simulation of Crosslinked Polymer Conformance Treatments," with G.A. Pope and K. Sepehrnoori. In the Eleventh Annual Report, Category C: Process Performance and Design, and Formation Evaluation and Stimulation, Enhanced Oil and Gas Recovery Research Program, Center for Petroleum and Geosystems Engineering, The University of Texas at Austin, March 1994.
52. "Chemical Flooding," with G.A. Pope and K. Sepehrnoori. In the Eleventh Annual Report, Category C: Process Performance and Design, and Formation Evaluation and Stimulation, Center for Enhanced Oil and Gas Recovery Research, The University of Texas at Austin, March 1994.
53. "The Simulation Screening Study of the Potential of Surfactant Flooding in the Lunde Field," Final report prepared for Saga Petroleum, 1995.
54. "An Alkaline/Surfactant/Polymer Pilot Design for Karamay Oil Reservoir," Final report prepared for Xinjiang Petroleum Administrative Bureau, 1995.
55. "Simulation Studies of a Polymer Assisted Surfactant Flooding in the Gullfax Field," Final report prepared for Statoil, 1994.
56. "A Simulation Study of an Alkaline/Surfactant/Polymer Flooding in the Gu Dong Field," Final report prepared for Shengli Oilfield Geological Research Institute, 1993.
57. "Carbon Dioxide Simulation," Center for Enhanced Oil and Gas Recovery Research Annual Report, Category C, April 1987.

ORAL PRESENTATIONS:

1. "Rate and Interfacial Tension Dependent CO₂ Relative Permeability," 2010 SIAM Annual Meeting, Pittsburgh, PA, July 12-16, 2010.
2. "The Grand Challenge of Carbon Sequestration Simulation," Workshop on Carbon Sequestration for High School Mathematics and Science Teachers, Austin, Texas June 15-16, 2010.
3. "Simulation of Carbon Sequestration," Workshop on Carbon Sequestration for High School Mathematics and Science Teachers, Austin, Texas June 15-16, 2010.
4. "A Critical Assessment of CO₂ Injection Strategies in Saline Aquifers," SPE Western Regional Meeting, Anaheim, CA, May 27-29, 2010.
5. "Parallel Simulations of Commercial-Scale Polymer Floods," SPE Western Regional Meeting, Anaheim, CA, May 27-29, 2010.
6. "Modeling Chemical EOR," Chemical EOR JIP Meeting, April 29-30, 2010, Austin, Texas.
7. "Modeling and Assessment of Wettability Alteration Processes in Fractured Carbonates using Dual Porosity and Discrete Fracture Approaches," 2010 SPE Improved Oil Recovery Symposium, Tulsa, O.K., April 24-28, 2010.
8. "Simulations of Chemical Processes," Reservoir Simulation JIP meeting, Feb. 26, 2010, Austin, Texas.
9. **Plenary talk** on Modeling Challenges in Chemical EOR, presented at the V International Congress on Numerical Methods, Guanajuato, Mexico, Feb. 3-5, 2010.
10. "Simulations of Chemical Processes," Shengli oil Company, March, 2010, Austin, Texas.

11. "Simulations of Chemical Processes," Kuwait Oil Company, 2009, Austin, Texas.
12. "Modeling CO₂ Injection in Saline Aquifers," Center for Subsurface Modeling (CSM) annual Affiliate meeting, Oct. 29-30, 2009, Austin, Texas.
13. "Modeling Chemical EOR," Reservoir Simulation JIP Meeting, Feb. 26, 2009, Austin, Texas.
14. "Modeling Chemical EOR," Chemical EOR JIP Meeting, April. 26, 2009, Austin, Texas.
15. "Modeling CO₂ Benchmark Problem Using IPARS," Workshop on Modeling and Risk Assessment of Geological Storage of CO₂, Svalbard, Norway • Aug 3-7, 2009
16. "Scale up Methodology for Wettability Modification in Fractured Carbonates," at the 2009 SPE Reservoir Simulation Symposium, Houston, TX, Feb 2-4.
17. "Coupled Parallel Thermal-Compositional Simulations of CO₂ Sequestration using IPARS," with S.G. Thomas and M.F. Wheeler, Poster presentation at the Workshop on Modeling and Risk Assessment of Geological Storage of CO₂, Svalbard, Norway, Aug 3-7, 2009.
18. "Does it Matter How to Inject CO₂? " with S.G. Thomas and M.F. Wheeler, presented at the Workshop on Modeling and Risk Assessment of Geological Storage of CO₂, Svalbard, Norway, Aug 3-7, 2009.
19. "Modeling Multiphase Flow Coupled with Biogeochemistry in Porous Media, I- None –Newtonian Fluids," with C. Yuan and M.F. Wheeler, presented at the SIAM Geosciences, Leipzig, Germany, June 15-18, 2009.
20. "High Resolution Modeling of CO₂ Sequestration," with S.G. Thomas, X. Kong, and M.F. Wheeler, presented at the SIAM Geosciences, Leipzig, Germany, June 15-18, 2009.
21. "Numerical Modeling of CO₂ Sequestration Using a Parallel and Efficient Thermal-Compositional Simulator," with S.G. Thomas and M.F. Wheeler, presented at the Teragrid 08 Conference, Las Vegas, Nevada, June 9-13, 2008.
22. "On Enhancements of IPARS on Aqueous Chemistry and Water-CO₂ Hysteresis," Center for Subsurface Modeling (CSM) annual Affiliate meeting, Oct. 29-30, 2008, Austin, Texas.
23. Mechanistic Interpretation and utilization of Viscoelastic Behavior of Polymer Solutions for Improved Polymer-Flood Efficiency, 2008 SPE Improved Oil Recovery Symposium, Tulsa, OK, April 19-23.
24. "Development of A Reservoir Simulator for Souring Predictions," with M. Farhadinia, S.L. Bryant, and K. Sepehrnoori, Poster presented at the Center for Subsurface Modeling (CSM) annual Affiliate meeting, Oct. 29-30, 2008, Austin, Texas.
25. "Modeling and Simulation of Reservoir Souring and its treatment," with M. Haghshenas, K. Sepehrnoori, S.L. Bryant, Poster presented at the Center for Subsurface Modeling (CSM) annual Affiliate meeting, Oct. 29-30, 2008, Austin, Texas.
26. "Large Scale Parallel Modeling of CO₂ Sequestration Using a General Purpose Compositional simulator with Thermal and Geochemical Capabilities," Presented at the Workshop on Modeling Benchmark Studies on Problems related to CO₂ storage in Geologic Formation, Stuttgart, Germany, April 2- 4, 2008.
27. "Modeling Chemical EOR," Presented at the Chemical EOR Research Program Annual Workshop, Austin, Texas, April 24-25, 2008.
28. "A Simplified Alkaline/Surfactant/Polymer Mode," Presented at the Progress meeting on UT-Chevron EOR Alliance, Austin, Texas, Jan. 17, 2008.
29. "Numerical Modeling of Chemical EOR Processes," Presented at the Reservoir Simulation Joint Industry Program, Austin, Texas, Feb. 22, 2008.
30. "Modeling Trends in CO₂ Sequestration," Presented at the Center for Subsurface Modeling Affiliate meeting, Austin, Texas, Oct. 23-24, 2007.
31. "Numerical Modeling of Chemical EOR Processes," Presented at the Reservoir Simulation Joint Industry Program, Austin, Texas, Feb. 22, 2007.
32. "Modeling Wettability Alteration in Naturally Fractured Reservoirs," with N. Fathi., G.A. Anderson, K. Sepehrnoori and Presented at the Center for Subsurface Modeling, Austin, Texas, Oct. 2006.

33. "History Matching using the Ensemble Kalman Filter with the Singular Value Decomposition sampling Strategy," with B. Liang, K. Sepehrnoori and Presented at Center for Subsurface Modeling, Austin, Texas, Oct. 2006.
34. "Chemical Flooding Optimization using Experimental Design," with D. Ghorbani, K. Sepehrnoori and Presented at the Center for Subsurface Modeling, Austin, Texas, Oct. 2006.
35. "Wettability Alteration in Naturally Fractured Reservoirs," Presented at the Reservoir Simulation Joint Industry project, Austin, Texas, Feb. 18, 2005.
36. "Chemical Flooding Optimization," Presented at the Reservoir Simulation Joint Industry project, Austin, Texas, Feb. 18, 2005.
37. "A New Generation Chemical Flooding Simulator," Presented at the Oil Technology Program, Contractor Review Meeting, Tulsa, Oklahoma, Sept. 15, 2003.
38. "Development of an Improved Simulator for Chemical IOR Methods," Presented at the Reservoir Simulation Joint Industry project, Austin, Texas, Feb. 13, 2004.
39. "Development of an Improved Simulator for Chemical IOR Methods," Presented at the Reservoir Simulation Joint Industry project, Austin, Texas, Feb. 7, 2003.
40. "Simulations of Chemical and Microbial Enhanced Oil Recovery Methods," Presented at the 22nd Annual Workshop & Symposium, Collaborative Project on Enhanced Oil Recovery International Energy Agency (IEA), Vienna, Austria, Sept. 9-12, 2001.
41. "A Simulation Study of Hysteretic Flow in Porous Media," Presented at the 6th SIAM Conference on Mathematical and Computational Issues in Geosciences, Boulder, Colorado, June 12, 2001.
42. "Chemical Flooding," Presented at the Reservoir Simulation Joint Industry project, Dec. 11, 2001, Austin, Texas
43. "Role of Numerical Models in the Design of Surfactant Flood Tests," Poster Presentation at the Second International Conference on Remediation of Chlorinated and Recalcitrant compounds, Monterey, California, May 23, 2000.
44. "Test Design Using Numerical Simulations," SEAR Workshop, Monterey, CA, May 21, 2000.
45. "Development of an Improved Simulator for Chemical and Microbial IOR Methods," Presented at the Oil Technology Program, Contractor Review Meeting, Denver, Colorado, June 2000.
46. "Development of an Improved Simulator for Chemical IOR Methods," Presented at the Reservoir Simulation Joint Industry project, Austin, Texas, Dec. 8, 2000.
47. "Development of an Improved Simulator for Chemical Improved Oil Recovery Methods," 1999 Reservoir Engineering Research Program, Austin, Texas, April 16, 1999.
48. "Surfactant/Cosolvent/Polymer Formulation, Features, and Processes," UTCHEM/GMS Workshop, Austin, TX, November 17, 1998.
49. "UTCHEM Formulation," UTCHEM/GMS Workshop, Austin, TX, November 17, 1998.
50. "Geochemical and Surfactant/Foam Formulation in UTCHEM," UTCHEM/GMS Workshop, Austin, TX, November 18, 1998.
51. "Incorporation of Solubilization Kinetics into a Surfactant-Enhanced DNAPL Remediation Model," First International Conference on Remediation of Chlorinated and Recalcitrant compounds, Monterey, California, May 18, 1998.
52. "UTCHEM Model and Modeling of Surfactant Flushing," SERDP Project CU/1062 Peer Review Meeting, Vicksburg, Mississippi, June 8-9, 1998.
53. "Demonstration of Surfactant Flooding of an Alluvial Aquifer Contaminated with DNAPL," at the 5th Chemical Congress of North America in Cancun, Mexico, November 14, 1997.
54. "A Successful Example of Predictive Modeling of a Surfactant Remediation Field Test," Fourth SIAM Conference on Mathematical and Computational Issues in the Geosciences," Albuquerque, New Mexico,

June 16-19, 1997.

55. "Single-Well Wettability Tracer Test Design for Sulimar Queen Field," 3rd Tracer Workshop, Austin Texas, May 21-22, 1996.
56. "An Overview of 3-D Multiphase Flow Simulators (IMPES, Implicit, and Parallel UTCHEM)," Poster presented at the 5th Annual Meeting of the Center for Subsurface Modeling, Austin Texas, Oct. 31, 1995.
57. "A Compositional Simulator for Modeling Contaminant Transport," Poster presented at the 5th Annual Meeting of the Center for Subsurface Modeling, Austin Texas, Oct. 31, 1995.
58. "Adapting an Oil Reservoir Compositional Simulator to Modeling Ground Water Problems," SIAM Conference on Mathematical and Computational Issues in the Geosciences, San Antonio, Texas, 1994.
59. "An Overview of the Research at The University of Texas on Both Physical and Computational Problems of Large-Scale Chemical Enhanced Oil Recovery Simulation," Proceedings of the International Energy Agency (IEA) meeting on Enhanced Oil Recovery, Hanover, West Germany, September 13-21, 1986.

PATENTS:

None

GRANTS AND CONTRACTS:

Co-Investigators	Title	Agency	Grant Total	Grant Period
R. Johns, K. Sepehrnoori, and L.W. Lake	Gas Flooding of Carbonate Reservoirs	Maersk Oil	1000,000 (Pending)	Submitted in July 30, 2010
M.F. Wheeler, K. Sepehrnoori, G.A. Pope	Simulations of Clean and Secure Energy from Domestic Stranded Oil in Residual Oil Zones	DOE-NETL	999,442 (Pending)	Oct. 2010-Sept. 2013
G. Pope et al.	Modeling Chemical EOR	Chevron-EOR Alliance	750,000 (Pending)	June 2010-May 2013
Q. Nguyen, K. Mohanty	Chemical Enhanced Oil Recovery in PEMEX Reservoirs	PEMEX Oil Company	\$270,000	June 2010-Dec 2010
G. Pope, K. Mohanty, Q. Nguyen	EOR Studies for the PEMEX E&P North-East Marine Region Fields, PEMEX	PEMEX Oil Company	1,400,000	Jan. 2008-Dec 2010
Q. Nguyen	Chemical Enhanced Oil Recovery in the Yates Oilfield	Kinder Morgan	75,000	March 2010-Aug. 2010
G. Pope <i>et al.</i>	Center for Frontiers of Subsurface Energy Security	DOE-BES	15,500,000	Aug. 2009-2013
M. Wheeler, T. Arbogast	Computational Models for Evaluating Long Term CO ₂ Storage in Saline Aquifers	NSF	1,332,000	Oct 2008-Sept. 2011
M. Wheeler, T. Arbogast	Computational Models for Evaluating Long Term CO ₂ Storage in Saline Aquifers	KAUST AEA	431,253	Sept 2008-Dec 2009
M. Wheeler, T. Arbogast	Geosystems Science and Engineering Modeling for CO ₂ Sequestration	National Initiative for Modeling and Simulation	100,000	March 2007-Aug. 2008
G. Pope et al.	Chemical EOR JIP	Oil Companies	100,000/year	2007-current
K. Sepehrnoori	Reservoir Simulation JIP	Oil companies	50,000/year	2006-current
G. Pope et al.	Chevron EOR Alliance	Chevron	1000,000/year	Jan 2008-May 2010

K. Sepehrnoori, G. Pope	A Framework to Design and Optimize Chemical Flooding Processes	DOE-NETL	393,937	Sept. 2003-Aug. 2006
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GRANTS AND CONTRACTS:

Co-Investigators	Title	Agency	Grant Total	Grant Period
L. Lake and G. Pope	Surfactant Flooding Design for Extreme Conditions	BP Exploration and Production Inc.	35000	Feb 2005 - May 2005
G. Pope, and K. Sepehrnoori	Modeling Wettability Alteration Using Chemical Enhanced Oil Recovery (EOR) Processes in Naturally Fractured Reservoirs	DOE-NETL	431,253	Oct 2004-Spt 2007
---	A New Generation Simulator for Improved Oil Recovery Processes	ARP-Texas Higher Education	150,000	Jan. 2002-Dec. 2003
G. Pope, K. Sepehrnoori	A New Generation Simulator	DOE	910,000	Sept. 2000 - Aug. 2003
G. Pope	The Role of Rate-Limited Mass Transfer in Subsurface-Enhanced Aquifer Remediation	ARP-Texas Higher Education	139,400	Jan. 2000 -Dec. 2001
G. Pope	Relative Permeability Behavior for the Description of CO ₂ Recovery Processes	BPAmoco	100,000	2000 - 2001
B. Rossen	Foam-Enhanced Sweep in Surfactant Subsurface Remediation	ATP- Texas Higher Education	155,224	Jan. 2000 – Dec. 2001
G. Pope, J. Trangenstein	Multiscale Modeling and Simulation in Scientific Inference: Hierarchical Methods for Parameter Estimation in Porous Flow	NSF	165,112	May 1999-April 2002
G. Pope, K. Sepehrnoori	Development of an Improved Simulator for Chemical and Microbial Improved Oil Recovery (IOR) Methods	DOE	849,452	April 1998-March. 2001

UTCHEM Training Research

Co-Investigators	Title	Agency	Grant Total	Grant Period
--	UTCHEM Training	Marathon Oil Company	15,000	Aug. 9-13, 2010
--	UTCHEM Training	Pluspetrol Oil Company	15,000	Aug. 9-13, 2010
--	UTCHEM Training	Shell Oil Company	50,000	May 2010-Aug. 2010
--	UTCHEM Training	Aramco	50,000	Nov 2008-Dec. 2008
--	UTCHEM Training	Cairn India	15,000	April 28-May 2, 2008
--	UTCHEM Training	Statoil	15,000	Oct 23-27, 2006
--	UTCHEM Training	Total	15,000	Aug 21-23, 2006
--	UTCHEM Training	Shell Exploration and Production	15,000	Jan. 30-Feb. 3, 2006
--	UTCHEM Training	Tiorco Inc.	2000	Feb. 2006
--	UTCHEM Training	Tiorco Inc.	4000	Aug. 2-3 2006
G. Pope , K. Sepehrnoori	UTCHEM Training	Daqing Oil Company	100,000	Summer 1999
G. Pope , K. Sepehrnoori	UTCHEM Training	Xinjiang Petroleum Administrative Bureau	100,000	Summer 1994
G. Pope , K. Sepehrnoori	UTCHEM Training	Geological Research Institute, China	100,000	Summer 1993

Summary of Research Funding

Research	2005-2010	Career
Number of Funded Projects	15	30
Funding Level – Total	\$26,279,110	\$29,758,895
Funding Level – Candidate share	\$4,015,125	\$5,087,255

PH.D. SUPERVISIONS COMPLETED:

N. Najafabadi Fathi	2009	Petroleum Engineering	Univ. of Texas at Austin
H. Mohammadi	2008	Petroleum Engineering	Univ. of Texas at Austin
D. Ghorbani	2008	Petroleum Engineering	Univ. of Texas at Austin

M.S. SUPERVISIONS COMPLETED:

C. Yuan	2009	Petroleum Engineering	Univ. of Texas at Austin
J. Prasanphanich	2009	Petroleum Engineering	Univ. of Texas at Austin
K. Rai	2008	Petroleum Engineering	Univ. of Texas at Austin
T. Sangvaree	2008	Petroleum Engineering	Univ. of Texas at Austin
G. Anderson	2006	Petroleum Engineering	Univ. of Texas at Austin
N. Najafabadi Fathi	2005	Petroleum Engineering	Univ. of Texas at Austin
L. Castillo	2003	Petroleum Engineering	Univ. of Texas at Austin

PH.D. IN PROGRESS:**A. Students admitted to candidacy**

Yuan, Changli

Kong, Xianhui

Molai, Alireza

Godarzi, Ali

B. Post M.S. students preparing to take Ph.D. qualifying exam

Zhitao, Li

M.S. IN PROGRESS:

Veedu, Faiz

Lee, Ahra

Sharma, Abhinav

TEACHING**A. Fundamentals of Enhanced Oil Recovery (19375, 19463)**

Fall 2010

B. Continuing Education

- PETEX Basic EOR course, Houston., Texas, Aug. 30-Sept. 2, 2010
- PETEX Production Technology course, Houston, Texas, Feb. 24-25, 2010.
- Petroskills Oil Recovery Enhancement course, Houston, Texas, Dec. 14-18, 2009.
- Petroskills Oil Recovery Enhancement course, Calgary, Canada, Nov. 17-21, 2008.
- Petroskills Oil Recovery Enhancement course, Houston, Texas, June. 19-20, 2008.
- Petroskills Oil Recovery Enhancement course, Houston, Texas, Nov. 29-30, 2007.
- A five-day workshop for 20 PEMEX engineers on "An Overview of Modeling Capabilities of CPGE and Chemical Flood Process Simulations using UTCHEM," CD Del Carmen, Mexico, Dec. 3-7, 2007.
- Training courses for numerous oil companies such as Shengli, Daqing, Xinjiang, Statoil, Shell, TOTAL, Tiorco, Saudi Aramco, and Oxy.

C. Workshops

- Conducted (with M. Wheeler and T. Arbogast) a two-day workshop for high school science and math teachers and students, Austin, Texas., June 15-16, 2010,
- Conducted a one-day workshop on Introduction to Multiphase Modeling of NAPL Spills Using UTCHEM and GMS at the Remediation of Chlorinated and Recalcitrant Compounds, the fourth International Conference, Monterey, CA, May 23, 2004.
- Conducted a one-day short course on UTCHEM flow and transport model sponsored by Battelle, May 23, 2002, Monterey, CA.
- Conducted a three-day workshop on Multi-Phase modeling of NAPL spills using UTCHEM sponsored by National Ground Water Association, November 28-30, 2001, Austin, Texas.

D. PhD Committee Membership

1. Mehdi Haghshenas, in progress
2. Meghdad Roshanfekar, in progress

3. Pan, Feng, "Development and Application of a Coupled Geomechanics Model and Parallel Compositional Reservoir Simulator," Dec. 2009
4. Varavei, Abdoljalil, "Implementation of a Thermal Model in a General Purpose Adaptive Compositional Simulator," May 2009.
5. Sayarpour, Morteza, "A Methodology to Optimize Reservoir Simulation for Hydrocarbon Recovery Processes," May 2008
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19. *Kim, Hyun-Soo, "Simulation Study of Gel Conformance Treatments," May 1995.
20. Liu, Jianchun, "High-Resolution Methods for Enhanced Oil Recovery Simulation," August 1993.

*: **Role of a Co-advisor.**

E. Postdoctoral Supervision

M.A. Farhadinia, PhD in Petroleum and Geosystems Engineering, The University of Texas at Austin, 2009-present.

F. Undergraduate Interns

Sponsored several undergraduate students:

- Thomas Spofford, Spring 2010-current
- Pritesh Maker, 1999-2001

G. Visiting Students and Scholars

- Sponsored and trained three visiting graduate students from The University of Bergen, Norway, 2008-2009.

- Sponsored several visiting scholars from China

VITA:

Mojdeh Delshad is a research associate professor in the Department of Petroleum and Geosystems Engineering at the University of Texas at Austin. She is the assistant director for the Department of Energy funded Center of Frontiers of Subsurface Energy Security (CFSES).

She holds BS degree in Chemical Engineering from Sharif University in Iran and MS and Ph.D. degrees in Petroleum Engineering from The University of Texas at Austin. She has 25 years of experience in modeling multiphase flow, property modeling, and reservoir simulation of enhanced oil recovery processes and more than 10 years of experience in modeling and designing subsurface contaminant transport and remediation processes. She has over 80 journal publications. She is in charge of the University of Texas Chemical Flooding Simulator (UTCHEM) development, user support and training. Her current research funding is provided by NSF, DOE-BES, and several national and international oil companies such as Chevron, Pemex, Shell, and Kinder Morgan.

She has been an associate editor for the SPE Reservoir Evaluation and Engineering Journal since 2005. She is awarded the SPE rank of "A Peer Apart" for reviewing more than 100 technical papers. She is an instructor for Enhanced Oil Recovery courses offered by Petroskills and PETEX. She has been selected as a member of the SPE's books Development Committee starting Sept. 2010 for a three-year term.

Her current research projects are listed below.

- Mechanistic understanding and modeling key mechanisms for carbon storage in deep aquifers
- Modeling and application of microgels for conformance control
- Enhanced oil recovery processes involving chemical and gas injection
- Wettability and chemically altered wettability oil recovery methods
- Numerical simulator development and application to EOR processes and CO₂ sequestration
- Petrophysical property modeling
- Parallel computation
- Experimental Design methodology and Monte Carlo simulation for optimization of EOR processes
- Numerical modeling and EOR processes for naturally fractured reservoirs
- Groundwater modeling and remediation
- Benchmark studies using in-house and commercial simulators for CO₂ sequestration and EOR

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