DR. DAVID S. SCHECHTER

Education

• The University of Texas at Austin	Chemical Engineering	B.S.
• University of Bristol, United Kingdom	Physical Chemistry	Ph.D.

Professional Experience

Registered Professional Engineer, Texas, License No. 93115

2024 – Current, Department Chair and Longwell-Leonard Distinguished Professor, Craft & Hawkins Department of Petroleum Engineering, Louisiana State University –Spearheading the LSU PERTT Lab to establish it as a nationally recognized hub for CO_2 well control testing and CCUS operations. Led departmental efforts to strengthen research and teaching in subsurface energy systems, including initiatives in carbon capture, utilization, and storage (CCUS), hydrogen, and enhanced oil recovery (EOR). Fostered interdepartmental and industry partnerships to position LSU PETE as a strategic contributor to Louisiana's low-carbon energy transition.

2018 – Current, V.P Reservoir Engineering, Board of Directors, EORETC – Collaborated on building business model and technical capability of Enhanced Oil Recovery (EOR) company. Contributed technical support for co-injection pilot in Bakken and DJ Basin with rich gas and aqueous phase surfactants. Interfaced with management at Liberty Resources, Exxon and OXY to develop, implement, manage, and analyze pilot results. Completed and delivered results of Bakken co-injection project in form of published manuscript. Voted to Board of Directors in 2022.

2018 – Current, Chief Technology Officer, Third Wave Production LLC - Collaborated with management team to provide technical support for surfactant huff n' puff projects in multi-well Eagle Ford project. Formulated surfactants for EOR application in Eagle Ford and Wolfcamp reservoirs. Planned implementation of injection programs. Analyzed surfactant flowback data and well performance data. Determined project economics. Published results in SPE Journal.

2012 – Current, Adjunct Professor of Oil and Gas Technology, International Hellenic University Kavala, Greece – responsible for teaching integrated reservoir studies as part of the MSc program.

2000 – Current, Short Course Instructor, Network of Excellence in Training (NExT) – Taught 90 reservoir and production engineering related courses in 18 different countries to various segments of Schlumberger and several other companies. Taught basic to advanced aspects of reservoir interpretation, production engineering and EOR to over 500 Schlumberger employees. Taught and

consulted with several National Oil Companies such as PEMEX, PDVSA, Aramco, Ecopetrol, Korean National Oil Company & Kuwait Joint Operations in addition to companies like ExxonMobil, Halliburton and Flotek.

May 2000 – Aug. 2022, George and Joan Voneiff Professor of Petroleum Engineering, Harold Vance Department of Petroleum Engineering, Texas A&M University. Taught multiple courses on integrated reservoir studies, well log interpretation, reservoir simulation and EOR. Presented to Board of Directors and CEO of Chaparral Energy Co. and awarded 1.75 million dollars to construct a state-of-the-art CO_2 Enhanced Oil Recovery Laboratory at Texas A&M University. Directed and managed laboratory and modelling research on application of gas and surfactants for EOR in unconventional liquid reservoirs. Managed personnel and budget for Chevron CT Imaging Laboratory. Supervised, trained, mentored, and graduated over 90 MS and PhD students. Managed multiple technicians and postgraduates. Responsible for oversight of multiple research budgets.

May 2011 – August 2011 Technical Specialist, Pioneer Natural Resources, Las Colinas, TX – Worked as a technical expert/mentor to interpret large scale tracer testing in 2000-acre waterflood. Analyzed water injection in 20 patterns. Determined waterflood reserves, preliminary economics on expanded pattern floods. Consulted on coring horizontal wells in Wolfcamp shale. Assisted in determining reserves in Spraberry Trend Area units.

May 2006 – August 2006 Technical Specialist, Pioneer Natural Resources, Las Colinas, TX – Worked as a technical expert/mentor to perform reservoir characterization for CO_2 EOR in the Spraberry Trend Area, west Texas and to come up with development opportunities in the Spraberry Trend Area. Determined reserves from water injection projects in both horizontal and vertical injection-production schemes.

May 2005 – August 2005 Technical Specialist, Pioneer Natural Resources, Las Colinas, TX - Worked as a technical expert/mentor to perform reservoir characterization for CO_2 EOR in the Spraberry Trend Area and to come up with development opportunities in the Spraberry Trend

1993– 2000 Senior Scientist, Section Head: Integrated/ Naturally Fractured Reservoir Studies/ CO_2/EOR Research Group, Petroleum Recovery Research Center (PRRC), New Mexico Institute of Mining and Technology, Section Head for the Gas Injection and EOR/Naturally Fractured Reservoirs Group, Author and P.I. of a 13-million-dollar Department of Energy Field Demonstration Project that was cost shared with Parker and Parsley Petroleum (now Pioneer Natural Resources) and the U.S. DOE. ***Tenured 1995.***

1996 – 2000 Adjunct Associate Professor of Chemical Engineering, Petroleum and Chemical Engineering Department, New Mexico Institute of Mining and Technology, appointed as adjunct professor to teach courses on thermodynamics and kinetics in chemical engineering department.

1996 – 1997 Interim Director, Petroleum Recovery Research Center New Mexico Institute of Mining and Technology, managed the PRRC for a one-year term. This included management of the faculty staff and students and overall budget during the search for a new Director.

1990–1993 Acting Assistant Professor, Department of Petroleum Engineering, Stanford University, promoted from post-doctoral research associate to assistant professor to act as instructor in several courses along with continuing research in gas injection in naturally fractured reservoirs.

Publications

David Schechter - Google Scholar

Google Scholar Citation Indices	All	Since 2020
Citations	6323	3113
h-index	42	31
i10-index	107	69

Journal Publications

1. J Zhang, R Zhang, I Ataceri, A Sarmah, D Schechter, E Gildin, "Enhancing Oil Recovery in Eagle Ford Shale: A Multiscale Simulation Study of Surfactant Huff'n'Puff Methodology," SPE Journal 29 (12), 7180-7193.

2. Ladan, E. and Schechter, D.S., 2024, "Nonionic Surfactant Blends for Enhanced Oil Recovery in High-Temperature Eagle Ford Reservoirs," SPE Journal 29 (01), accepted for publication.

3. Ataceri, I., Saputra I.W.R., Bagareddy, A., Elkady, M., Schechter. D.S. Haddix G., Brock, V., Raney K., Strickland W., Morris, G., 2023, "Surfactant Enhanced Oil Recovery Improves Oil Recovery in a Depleted Eagle Ford Unconventional Well: A Case Study," SPE Journal 28 (06): 3180–3191.

4. Saputra, I.W.R and Schechter, D.S., 2021, "SARA-Based Correlation to Describe the Effect of Polar/Nonpolar Interaction, Salinity, and Temperature for Interfacial Tension of Low-Asphaltene Crude Oils Characteristic of Unconventional Shale Reservoirs," SPE Journal 26 (06), 3681-3693.

5. Saputra, I.W.R., Adebisi O., Ladan E., Bagareddy, A., Sarmah, A., and Schechter, D.S., 2021, "The Influence of Oil Composition, Rock Mineralogy, Aging Time, and Brine Pre-soak on Shale Wettability," ACS Omega 7 (1), 85-100.

6. Zhang, F. and Schechter, D.S., 2021. "Gas and Foam Injection with CO_2 and Enriched NGL's for Enhanced Oil Recovery in Unconventional Liquid Reservoirs," Journal of Petroleum Science and Engineering, Vol. 202, 108472.

7. Tovar, F.D., Barrufet, M.A. and Schechter, D.S., 2021. Enhanced Oil Recovery in the Wolfcamp Shale by Carbon Dioxide or Nitrogen Injection: An Experimental Investigation," SPE Journal 26 (01), 515-537.

8. Chen, W. and Schechter, D.S., 2021. "Surfactant Selection for Enhanced Oil Recovery Based on Surfactant Molecular Structure in Unconventional Liquid Reservoirs," Journal of Petroleum Science and Engineering, Vol.196, https://doi.org/10.1016/j.petrol.2020.107702.

9. Al-Yousif, Z., Almobarky, M. and Schechter, D.S., 2020. "Gas/Water Foams Stabilized with a Newly Developed Anionic Surfactant for Gas Mobility Control Applications," Petroleum Science 17 (4), 1025-1036.

10. Al-Yousif, Z., Almobarky, M. and Schechter, D.S., 2020. "Surfactant and a Mixture of Surfactant and Nanoparticles to Stabilize CO_2/brine Foam to Control Gas Mobility, and Enhance Oil Recovery," Journal of Petroleum Exploration and Production Technology 10 (2), 439-445.

11. Al-Yousif, Z., Almobarky, M. and Schechter, D.S., 2019. "Nanoparticles-Stabilized CO_2/Brine Emulsions at Reservoir Conditions: A New Way of Mitigating Gravity Override in CO_2 Floods," *Aramco Journal of Technology*, summer 2019, Pg. 48-55.

12. Park, K.H. & Schechter, D.S., 2019 "Investigation of the Interaction of Surfactant at Variable Salinity with Permian Basin Rock Samples: Completion Enhancement and Application for Enhanced Oil Recovery," SPE Reservoir Drilling & Completions 21 (04): *1083-1096.* SPE-191801-PA. 10.2118/191801-PA.

13. Al Yousef, Z., Almobarky, M. and Schechter, D.S., 2018 "The Effect of Nanoparticle Aggregation on Surfactant Foam Stability." Journal of Colloid and Interface Science, 511, 365 – 373.

14. Alvarez, J.O., Saputra, I.W.R., and Schechter, D.S. 2018. The Impact of Surfactant Imbibition and Adsorption for Improving Oil Recovery in the Wolfcamp and Eagle Ford Reservoirs. SPE Journal 23 (06): 2103-2117. SPE-187176-PA. 10.2118/187176-PA.

15. Alvarez, J.O., Tovar, F.D., and Schechter, D.S. 2018. Improving Oil Recovery in the Wolfcamp Reservoir by Soaking/Flowback Production Schedule with Surfactant Additives. SPE Reservoir Evaluation & Engineering 21 (04): 1083-1096. SPE-187483-PA. 10.2118/187483-PA.

16. Sun, J. and Schechter, D. 2018. Pressure-Transient Characteristics of Fractured Horizontal Wells in Unconventional Shale Reservoirs with Construction of Data-Constrained Discrete-Fracture Network. SPE Production & Operations 33 (01): 21-31. SPE-184060-PA. 10.2118/184060-PA.

17. Johannes O. Alvarez and Schechter, D.S., Improving Oil Recovery in the Wolfcamp Unconventional Liquid Reservoirs using Surfactants in Completion Fluids, Journal of Petroleum Science and Engineering, Volume 157, 2017, Pages 806-815, ISSN 0920-4105

18. Alvarez, Johannes, Saputra, I Wayan; and Schechter, D.S., 2017. "Potential of Improving Oil Recovery with Surfactant Additives to Completion Fluids for the Bakken." Energy & Fuels 31 (6): 5982-5994.

19. Alvarez, J. O. and Schechter, D. S. 2017. "Wettability Alteration and Spontaneous Imbibition in Unconventional Liquid Reservoirs by Surfactant Additives," SPE Reservoir Evaluation & Engineering 20 (01): 107-117.

20. Alvarez, J. O. and Schechter, D. S. 2016, "Application of Wettability Alteration in the Exploitation of Unconventional Liquid Resources," Petroleum Exploration and Development 43 (5): 832-840.

21. Alvarez, J.O. and Schechter, D.S., 2017, "Wettability Alteration and Spontaneous Imbibition in Unconventional Liquid Reservoirs by Surfactant Additives" SPE Reservoir Evaluation & Engineering, Volume 20, Issue 1,.

22. Sun, J., Zou, A., Sotelo, E. et al. 2016, "Numerical Simulation of CO_2 Huff-n-Puff in Complex Fracture Networks of Unconventional Liquid Reservoirs." Journal of Natural Gas Science and Engineering 31: Pgs. 481–492.

23. Sun, J., Sotelo, E., Schechter, D. S. 2016, "Integrated Workflow to Model Complex Fracture Networks and to Evaluate the Uncertainty of Fracture Characterization on Production Performance Utilizing Microseismic, Outcrop and Horizontal Core Data." Journal of Natural Gas Science and Engineering, doi:10.1016/j.jngse.2016.08.024. 2016.

24. Sun, J., Schechter, D. S., Huang, C.-K. 2016, "Grid Sensitivity Analysis and Comparison between Unstructured PEBI and Structured Tartan/LGR Grids for Hydraulically Fractured Horizontal Wells in Eagle Ford Formation with Complicated Natural Fractures." SPE Journal, SPE-177480-PA.

25. Alvarez, J.O. and Schechter, D.S. 2016, "Application of Wettability Alteration in the Exploitation of Unconventional Liquid Resources" Petroleum Exploration and Development, Volume 43. Issue 5.

26. Sun, J., Schechter, D. S. Optimization-Based Unstructured Meshing Algorithms for Simulation of Hydraulically and Naturally Fractured Reservoirs with Variable Distribution of Fracture Aperture,

Spacing, Length and Strike. SPE Reservoir Evaluation & Engineering 18 (04):463–480. SPE-170703-PA. 2015.

27. Sun, J., Schechter, D. S. Investigating the Effect of Improved Fracture Conductivity on Production Performance of Hydraulic Fractured Wells through Field Case Studies, and Numerical Simulations. Journal of Canadian Petroleum Technology 54 (06):442–449. SPE-169866-PA. 2015.

28. Aymen A Alramadhan, Kilicaslan, U. and Schechter, D. S. "Analysis, Interpretation and Design of Inter-Well Tracer Tests in Naturally Fractured Reservoirs," Journal of Petroleum Science Research Vol. 4 Issue 2. 2015.

29. Syihab, Z., Sun, J., Schechter, D. Utilization of Voronoi Gridding for Simulation of Heterogeneous Discrete Fracture Networks Using Outcrop and X-Ray CT. Journal of Petroleum Science Research 3 (3):111–118. 2014.

30. Ufuk Kilicaslan, Aymen A. Alramadhan, David Schechter. Dynamic Reservoir Characterization of Naturally Fractured Reservoirs from an Inter-Well Tracer Test: A Case Study. Journal of Petroleum Science Research, 3(4), 153-166. doi: 10.14355/jpsr.2014.0304.01. 2014.

31. Li, W. and Schechter, D.S., "Anthrpogenic CO_2 for EOR in the North Burbank Unit," Canadian Energy Technology and Innovation, Vol. 2, No. 1, Pg. 19 – 27, March 2014.

32. Al-Ali, A Schechter, D.S., and Lane, R. "Improved CO_2 Flood Efficiency using Cross-Linked Gel Conformance Control and CO_2 Viscosifier Techniques," Canadian Energy Technology and Innovation, Volume 2, No. 2, 2013.

33. Schechter, D.S., Cai, S. & Singh, S. "Improved CO_2 Flood Efficiency using Cross-Linked Gel Conformance Control and CO_2 Viscosifier Techniques," Canadian Energy Technology and Innovation, Volume 1, No. 2, 2012.

34. Kim, T.H. and Schechter, D.S. "Estimation of Fracture Porosity of Naturally Fractured Reservoirs with No Matrix Porosity Using Fractal Discrete Fracture Networks," SPE Reservoir Evaluation & Engineering," 232 – 241. 2009

35. Chong, E., Syihab, Z., Putra, E., Hidaysti, D., & Schechter, D.S., "A New Grid Block System for Reducing Grid Orientation Effect in Oil Reservoir Simulation Processes," Petroleum Science and Technology, **5**, 371 – 390, November 2007.

36. Putra, E. & Schechter, D.S., "X-Ray Tomography Results Validate Numerical Modeling of Flow in Fractures," Archives of Mining Science, **51,** Issue 3, 435 – 452. 2006

37. Kim, T.H, Putra, E. and Schechter, D.S. "Analyzing Tensleep Natural Fracture Properties using X-Ray CT Scanning," e-Journal of Reservoir Engineering, PJO, **1**,1, 2006.

38. Kim, T.H, Putra, E. and Schechter, D.S. "Analyzing Scale and Pressure Dependent Properties of Rock Fracturing using X-Ray CT Scanning," Rock Mechanics in Underground Construction, ed. C.F. Leung and Y.X. Zhou, 407. 2006.

39. Guo, B., Holder, D.W. and Schechter, D.S., "Two-Phase Flow in an Oxidation Packed Bed under Microgravity Conditions," Physics of Fluids, American Institute of Physics, 2006.

40. Guo, B., Holder, D.W. and Schechter, D.S., "Mathematical Modeling of Wastewater Oxidation under Microgravity Conditions," American Journal of Applied Science, Vol. 2, No. 2, Pg. 473 – 482, February, 2005.

41. Chakravarthy, D., Muralidharan, V., Putra, E., and Schechter, D.S.: "Reducing Oil Bypassed during CO_2 Flooding in Fracture-Dominated Reservoirs," e-Journal of Reservoir Engineering, PJO, **1**,1, 2005.

42. Pashayev, O.H., Putra, E., Hidayati, D.T., and Schechter, D.S.: "Imbibition Assisted Oil Recovery," e-Journal of Reservoir Engineering, PJO **1**, 1, 2005.

43. Garcia, M., Putra, E., Hidayati, D., and Schechter, D.S.: "Reducing CO_2 Bypassing and Optimizing CO_2 Flood Design in Heterogenous Formations," e-Journal of Reservoir Engineering, PJO **1**, 1, 2005.

44. Galaviz, J. and Schechter, D.S., "Water Injection in Naturally Fractured Reservoirs," Undergraduate Journal of Science, Pg. 18-25, May, 2004.

45. Muralidharan, V., Putra, E., and Schechter, D.: "Investigating the Changes in Matrix and Fracture Properties and Fluid Flow under Different Stress-state Conditions," Saudi Aramco Journal of Technology, Pg. 22-38, Spring, 2004.

46. Chowdhury, T., Putra, E. and Schechter, D.S., "Improved Dual-Porosity Simulation in Naturally Fractured Reservoirs," Saudi Aramco Journal of Technology, Pg. 66 – 82, Spring 2004.

47. Alfred, D., Putra, E. and Schechter, D.S., "Modeling Fluid Flow Through Single Fractures Using Experimental, Stochastic and Simulation Approaches" Saudi Aramco Journal of Technology, Pg. 54 – 62, Fall 2003.

48. Putra, E., Muralidharan, V., and Schechter, D.S.: "Overburden Pressure Affects Fracture Aperture and Fracture Permeability in a Fractured Reservoir," Saudi Aramco Journal of Technology, Pg. 57 – 63, Summer. 2003.

49. Schechter, D.S., "Waterflooding and CO_2 Injection in the Naturally Fractured Spraberry Trend Area," Journal of Canadian Petroleum Technology, **41**, No. 10, Pg. 9 – 14, October, 2002.

50. Lorenz, J.C., Sterling, J.L., Schechter, D.S., Whigham, C.L., and Jensen, J.L., Natural Fractures in the Spraberry Formation, Midland Basin, TX: The Effects of Mechanical Stratigraphy on Fracture Variability and Reservoir Behavior," AAPG Bulletin**, 86**, No. 3, Pg. 505 – 524, 2002.

51. Montgomery, S.L., Schechter, D.S., and Lorenz, J.C., "Advanced Reservoir Characterization to Evaluate Carbon Dioxide Flooding, Spraberry Trend, Midland Basin, Texas," AAPG Bulletin, **84**, No. 9, Pg. 1247-1273, 2000.

52. Guo, B and Schechter, D.S., "A Simple and Rigorous IPR Equation for Vertical and Horizontal Wells Intersecting Long Fractures," Journal of Canadian Petroleum Technology, **38**, No. 7, Pg. 89 – 96, 1999.

53. Banik, A. and Schechter, D.S., "Utilization of Old Cased-Hole Logs for Characterization of the Naturally Fractured Spraberry Formation, Midland Basin, Texas," Publications of the West Texas Geological Society Inc., Pg. 83-88, 1997.

54. Schechter, D.S. and Guo, B., "Parachors Based on Modern Physics and Their Uses in IFT Prediction of Reservoir Fluids," SPE Reservoir Engineering, **15**, Pg. 65 – 81, 1996.

55. Schechter, D.S., Zhou, D. and Orr, F.M., Jr., J. Pet. Sci. and Eng., "Low IFT Drainage and Imbibition," **11**, 283–300, 1994.

56. Schechter, D.S. and Haynes, J.M., "Relative Permeability's of a Near Critical Binary Liquid," Transport in Porous Media, **9**, No. 1, Pg. 241–260, 1992.

57. M. Abe, D.S. Schechter, R.S. Schechter, W.H. Wade, U. Weerasoriya and S. Yiv, "Microemulsion Formation with Branched Tail Polyoxyethylene Sulfonate Surfactants," J. Colloid and Interface Sci., **114**, No. 2, 1986.

58. M. Abe, Schechter, D.S., Schechter, R.S., Wade, W.H., U. Weerasoriya and S. Yiv, "Microemulsion Behavior of Branched Tail EO Carboxylates and Sulfonates Proc., 6th Intl. Sym. on Surfactants in Solution, published by Plenum Press, Pg. 323 – 358, 1986.

Book Publication

Narr, W., Schechter, D.S. & Thompson, L. "Naturally Fractured Reservoir Characterization," Primer Series for Society of Petroleum Engineers, SPE Best Seller List, 2006. (Over 10,000 copies sold)

Conference Papers

1. Schechter, D.S., Moore, B., Sarmah, A., "Co-injection of Surfactant and Gas in Unconventional Reservoirs," SPE-218143-MS presented at SPE Improved Oil Recovery Conference, April 2024.

2. Zhang, J., Ataceri, I., Gildin, E., Schechter, D.S. Nasrabadi, H., "From Laboratory to Field: Simulation of a Surfactant Huff-N-Puff Pilot in the Eagle Ford," URTEC-3867529-MS presented at the SPE/AAPG/SEG Unconventional Resources Technology Conference, Denver, Colorado, USA, June 2023.

3. Elkady, M.H., Ataceri, I. and Schechter, D.S., "Novel High-Pressure-High-Temperature Setup for Surfactant-Assisted Spontaneous Imbibition," URTEC-3871298-MS presented at the SPE/AAPG/SEG Unconventional Resources Technology Conference, Denver, Colorado, USA, June 2023.

4. Ataceri, I., Saputra, I. W. R., Bagareddy, A., Elkady. M. H., Schechter D. S., Haddix G. W., Brock V. A., Raney, K. H., Strickland C. W., Morris, G. R., "Surfactant EOR Improves Oil Recovery in a Depleted Eagle Ford Unconventional Well - A Case Study," URTEC-3831548-MS presented at the SPE/AAPG/SEG Unconventional Resources Technology Conference, Denver, Colorado, USA, June 2023.

5. Sarmah, A., Ataceri, I., Vijapurapu, R., Zhang, J., Nasrabadi, H., Schechter, D.S., "Rock and Fluid-Based Correlation to Describe Surfactant Molecular Structure's Impact on Spontaneous Imbibition Experiments' Performance," URTEC-3864871-MS presented at the SPE/AAPG/SEG Unconventional Resources Technology Conference, Denver, Colorado, USA, June 2023.

6. Pospisil, G., Griffin, L., Southern, T., Strickland, S., McChesney, J., Pearson, C.M. Chantsalmaa, D., Sorensen, J., Hamling, J., Kurz, B., Bosshart, N., Warmack, M., Assady, A., Zhao, J., Schwanitz, B. Williams, A., Schechter, D.S., Sarmah, A. "East Nesson Bakken enhanced oil recovery pilot: Coinjection of produced gas and a water-surfactant mixture," Unconventional Resources Technology Conference, June 2022.

7. Abdelwahab, O., Almubarak, T., Schechter, D.S., Bhatia, M. "An Organic Gel System for Water Production Issues Post Hydraulic Fracturing," IPTC-22240-MS presented at the International Petroleum Technology Conference, Riyadh, Saudi Arabia, February 2022.

8. Rakananda, I.W.R. and Schechter, D.S. “A Temperature Operating Window Concept for Application of Nonionic Surfactants for EOR in Unconventional Shale Reservoirs,” SPE-206346-MS presented at the SPE Annual Technical Conference and Exhibition, Dubai, UAE, September 2021

9. Hill, A.D., Laprea-Bigott, M, Zhu, D., Moridis, G., Schechter D.S., Datta-Gupta, A., Abedi, S., Correa, J. Birkholzer, J. Friefeld, B.M., Zoback, M., Rasouli, F., Cheng, F., Ajo-Franklin, J., Renk, J., Ogunsola, O., Selvan, K., “The Eagle Ford shale laboratory: a field study of the stimulated reservoir volume, detailed fracture characteristics, and EOR potential,” Unconventional Resources Technology Conference, July 2020.

10. Niu, G. and Schechter, D.S., “Insights into Field Application of EOR Techniques from Modeling of Tight Reservoirs with Complex High-Density Fracture Network,” SPE-200345-MS presented at the SPE Improved Oil Recovery Conference, Virtual, August 2020.

11. AlYousef, Z. and Schechter, D.S. “The Synergy of Surfactant and Nanoparticles: Towards Enhancing Foam Stability,” SPE-198190-MS presented at SPE Kuwait Oil & Gas Show and Conference, Mishref, Kuwait, October 2019.

12. Zhang, F. I., Saputra, I.W.R., Adel I. and Schechter, D.S., “Numerical Investigation of EOR Applications in Unconventional Liquid Reservoirs through Surfactant-Assisted Spontaneous Imbibition SASI and Gas Injection Following Primary Depletion,” SPE-196055-MS presented at the SPE Annual Technical Conference and Exhibition, Calgary, Alberta, Canada, September 2019.

13. Zhang, F., Adel, I.A., Saputra, I.W.R. et al. 2019. Numerical Investigation to Understand the Mechanisms of CO_2 EOR in Unconventional Liquid Reservoirs. Presented at the SPE Annual Technical Conference and Exhibition, Calgary, Albert, Canada. https://doi.org/10.2118/196019-MS

14. Zhang, F., Saputra, I.W.R., Adel, I.A. et al. 2019. Numerical Investigation of EOR Applications in Unconventional Liquid Reservoirs through Surfactant-Assisted Spontaneous Imbibition (SASI) and Gas Injection Following Primary Depletion. Presented at the SPE Annual Technical Conference and Exhibition, Calgary, Albert, Canada. https://doi.org/10.2118/196055-MS

15. Al Hashim, H.W., Zhang, F., and Schechter, D.S. 2019. Investigation of the Effect of Pore Size Distribution on the Produced Oil from Surfactant-Assisted Spontaneous Imbibition in ULR Using NMR. Presented at the SPE Annual Technical Conference and Exhibition, Calgary, Albert, Canada. https://doi.org/10.2118/195931-MS

16. Adel, I.A., Zhang, F., Schechter, D.S. 2019. Assessment of Rich Gas EOR and the Effect of Enrichment on the MMP Values in the Wolfcamp. Presented at the SPE/AAPG/SEG

Unconventional Resources Technology Conference, Denver, CO, USA,

17. Zhang, F., Saputra, I.W.R., Parsegov, S.G. et al. 2019. Experimental and Numerical Studies of EOR for the Wolfcamp Formation by Surfactant Enriched Completion Fluids and Multi-Cycle Surfactant Injection. Presented at the SPE Hydraulic Fracturing Technology Conference Woodlands, TX, USA. https://doi.org/10.2118/194325-MS.

18. Adel, I.A., Tovar, F.D., Zhang, F. et al. 2018. The Impact of MMP on Recovery Factor During CO_2 - EOR in Unconventional Liquid Reservoirs. Presented at the SPE Annual Technical Conference and Exhibition, Dallas, Texas, USA. 17. https://doi.org/10.2118/191752-MS.

19. Adel, I.A., Zhang, F., Bhatnagar, N. et al. 2018. The Impact of Gas-Assisted Gravity Drainage on Operating Pressure in a Miscible CO2 Flood. Presented at the SPE Improved Oil Recovery Conference, Tulsa, Oklahoma, USA. https://doi.org/10.2118/190183-ms.

20. Almobarky, M., Alyousef, Z., and Schechter, D. 2018. Enhancing the Foam Stability Using Surfactants Mixtures. Presented at the SPE Kingdom of Saudi Arabia Annual Technical Symposium and Exhibition, Dammam, Saudi Arabia. 13. 10.2118/192449-MS.

21. Alyousif, Z., Almobarky, M., and Schechter, D. 2018. Nanoparticles-Stabilized CO_2 /Brine Emulsions at Reservoir Conditions: A New Way of Mitigating Gravity Override in CO_2 Floods. Presented at the SPE Kingdom of Saudi Arabia Annual Technical Symposium and Exhibition, Dammam, Saudi Arabia. 12. 10.2118/192383-MS.

22. Park, K. and Schechter, D.S. 2018. Investigation of the Interaction of Surfactant at Variable Salinity with Permian Basin Rock Samples: Completion Enhancement and Application for Enhanced Oil Recovery. Presented at the SPE Liquids-Rich Basins Conference - North America, Midland, Texas, USA. https://doi.org/10.2118/191801-MS.

23. Parsegov, S.G., Nandlal, K., Schechter, D.S. et al. 2018. Physics-Driven Optimization of Drained Rock Volume for Multistage Fracturing: Field Example from the Wolfcamp Formation, Midland Basin. Presented at the SPE/AAPG/SEG Unconventional Resources Technology Conference, Houston, Texas, USA. https://doi.org/10.15530/urtec-2018-2879159.

24. Parsegov, S.G., Niu, G., Schechter, D.S. et al. 2018. Benefits of Engineering Fracture Design. Lessons Learned from Underperformers in the Midland Basin. Presented at the SPE Hydraulic Fracturing Technology Conference and Exhibition, The Woodlands, Texas, USA. https://doi.org/10.2118/189859-ms.

25. Saputra, I.W.R. and Schechter, D.S. 2018. Comprehensive Workflow for Lab to Field-Scale Numerical Simulation to Improve Oil Recovery in the Eagle Ford Shale by Selective Testing and Modeling of Surfactants for Wettability Alteration. Presented at the SPE/AAPG/SEG Unconventional Resources Technology Conference, Houston, Texas, USA. https://doi.org/10.15530/urtec-2018-2884598.

26. Tovar, F.D., Barrufet, M.A., and Schechter, D.S. 2018. Gas Injection for EOR in Organic Rich Shale. Part I: Operational Philosophy. Presented at the SPE Improved Oil Recovery Conference, Tulsa, Oklahoma, USA. https://doi.org/10.2118/190323-ms.

27. Tovar, F.D., Barrufet, M.A., and Schechter, D.S. 2018. Gas Injection for EOR in Organic Rich Shales. Part Ii: Mechanisms of Recovery. Presented at the SPE/AAPG/SEG Unconventional Resources Technology Conference, Houston, Texas, USA. 21. 10.15530/URTEC-2018-2903026.

28. Zhang, F., Adel, I.A., Park, K.H. et al. 2018. Enhanced Oil Recovery in Unconventional Liquid Reservoir Using a Combination of CO_2 Huff-N-Puff and Surfactant-Assisted Spontaneous Imbibition. Presented at the SPE Annual Technical Conference and Exhibition, Dallas, Texas, USA. 20. https://doi.org/10.2118/191502-MS.

29. Zhang, F., Saputra, I.W.R., Adel, I.A. et al. 2018. Scaling for Wettability Alteration Induced by the Addition of Surfactants in Completion Fluids: Surfactant Selection for Optimum Performance. Presented at the SPE/AAPG/SEG Unconventional Resources Technology Conference, Houston, Texas, USA. 17. https://doi.org/10.15530/URTEC-2018-2889308.

30. Zhang, F., Saputra, I.W.R., Niu, G. et al. 2018. Upscaling Laboratory Result of Surfactant-Assisted Spontaneous Imbibition to the Field Scale through Scaling Group Analysis, Numerical Simulation, and Discrete Fracture Network Model. Presented at the SPE Improved Oil Recovery Conference, Tulsa, Oklahoma, USA. https://doi.org/10.2118/190155-ms.

31. Almobarky, M.A., Alyousef, Z., and Schechter, D. 2017. A Comparison between Two Anionic Surfactants for Mobility Control of Super Critical CO_2 in Foam-Assisted Miscible EOR. Presented at the Carbon Management Technology Conference, Houston, Texas, USA. https://doi.org/10.7122/486486-ms.

32. Alvarez, J.O., Saputra, I.W.R., and Schechter, D.S. 2017. The Impact of Surfactant Imbibition and Adsorption for Improving Oil Recovery in the Wolfcamp and Eagle Ford Reservoirs. Presented at the SPE Annual Technical Conference and Exhibition, San Antonio, Texas, USA. https://doi.org/10.2118/187176-ms.

33. Alvarez, J.O., Saputra, I.W.R., and Schechter, D.S. 2017. Potential of Improving Oil Recovery with Surfactant Additives to Completion Fluids for the Bakken. *Energy & Fuels* **31** (6): 5982-5994. Energ Fuel. https://doi.org/10.1021/acs.energyfuels.7b00573.

34. Alvarez, J.O., Tovar, F.D., and Schechter, D.S. 2017. Improving Oil Recovery in Unconventional Liquid Reservoirs by Soaking-Flowback Production Schedule with Surfactant Additives. Presented at the SPE Liquids-Rich Basins Conference - North America, Midland, Texas, USA. https://doi.org/10.2118/187483-ms.

35. Al Yousef, Z., Almobarky, M., & Schechter, D. (2017, August 24). Surfactant and a Mixture of Surfactant and Nanoparticles Stabilized-CO_2/Brine Foam for Gas Mobility Control and Enhance Oil Recovery. Carbon Management Technology Conference. doi:10.7122/486622-MS

36. Zou, A., & Schechter, D. (2017, August 24). Investigation of the Oil Recovery Mechanism during Laboratory CO_2 EOR Experiments with Unconventional Shale Cores through Compositional Simulation. Carbon Management Technology Conference. doi:10.7122/486243-MS

37. Tovar, F. D., Barrufet, M. A., & Schechter, D. S. (2017, May 17). Non-Destructive Measurement of Porosity, Compressibility and Gas Sorption in Core Plugs from the Wolfcamp Shale. Society of Petroleum Engineers. doi:10.2118/185604-MS

38. Phi, T., & Schechter, D. (2017, February 15). CO_2 EOR Simulation in Unconventional Liquid Reservoirs: An Eagle Ford Case Study. Society of Petroleum Engineers. doi:10.2118/185034-MS

39. Parsegov, S. G., and D. S. Schechter, 2017, Mudstone nanoindentation—How little cuttings can make a big difference: Gulf Coast Association of Geological Societies Transactions, v. 67.

40. Niu G., Sun J., Parsegov S.G. and Schechter D.S. Integration of Core Analysis, Pumping Schedule and Microseismicity to Reduce Uncertainties of Production Performance of Complex Fracture Networks for Multi-Stage Hydraulically Fractured Reservoirs. 2017. SPE 187524-MS

41. Valluri, M., Alvarez, J. and Schechter, D.S, "Study of the Rock/Fluid Interactions of Sodium and Calcium Brines with Ultra-Tight Rock Surfaces and their Impact on Improving Oil Recovery with Spontaneous Imbibition,' paper presented at SPE Low Perm Symposium, Denver, CO, USA, 5-6 May 2016.

42. Alvarez, J.O. and Schechter, D.S. Wettability, Oil and Rock Characterization of the Most Important Unconventional Liquid Reservoirs in the United States and the Impact on Oil Recovery. Unconventional Resources Technology Conference, paper presented at SPE Unconventional

Resources Technology Symposium, San Antonio, TX, USA, April, 2016.

43. Alvarez, J.O. and Schechter, D.S. Altering Wettability in Bakken Shale by Surfactant Additives and Potential of Improving Oil Recovery during Injection of Completion Fluids" presented at SPE Improved Oil Conference, Tulsa, OK, USA, 11-13 April 2016.

44. Adel, I. and Schechter, D.S., "Fast-Slim Tube: A Reliable and Rapid Technique for the Laboratory Determination of MMP in CO_2 – Light Crude Oil Systems," presented at SPE Improved Oil Conference, Tulsa, OK, USA, 11-13 April 2016. 4.

45. Sun, J., Zou, A., Schechter, D. S., "Experimental and Numerical Studies of CO_2 EOR in Unconventional Liquid Reservoirs with Complex Fracture Networks," presented at the SPE Improved Oil Recovery Conference, Tulsa, OK, USA, 11–13 April 2016.

46. Gamboa, E., Sun, J., Schechter, D. S. 2016. Reducing Uncertainties of Fracture Characterization on Production Performance by Incorporating Micro-seismic and Core Analysis Data. Presented at the SPE Asia Pacific Hydraulic Fracturing Conference, Beijing, China, 24–26 August, 2016

47. Sun, J., Schechter, D. S. The Impact of CT–Measured and Stress–Dependent Nonuniform Fracture Apertures on Production Performance of Micro-seismic–Constrained Complex Fracture Networks. Presented at the SPE Asia Pacific Hydraulic Fracturing Conference, Beijing, China, 24–26. 2016.

48. Sun, J., Niu, G., Schechter, D. S. Numerical Simulation of Stochastically-Generated Complex Fracture Networks by Utilizing Core and Micro-seismic Data for Hydraulically Fractured Horizontal Wells in Unconventional Reservoirs–a Field Case Study. Presented at the SPE Eastern Regional Meeting, Ohio, USA, 13–15 September. 2016.

49. Sun, J., Schechter, D. S. Pressure-Transient Characteristics of Fractured Horizontal Wells in Unconventional Shale Reservoirs with Complex Fracture Networks. Presented at the SPE Eastern Regional Meeting, Ohio, USA, 13–15 September. 2016.

50. Neog, A. and Schechter, D.S., "Investigation of Surfactant Induced Wettability Alteration in Wolfcamp Shale for Hydraulic Fracturing and EOR Applications," ," presented at the SPE Improved Oil Recovery Conference, Tulsa, OK, USA, 11 – 13 April 2016.

51. Alvarez, J.O., Schechter, D.S. 2015, "Wettability Alteration and Spontaneous Imbibition in Unconventional Liquid Reservoirs by Surfactant Additives" (presented at the SPE Latin American and Caribbean Petroleum Engineering Conference, Quito, Ecuador, 18–20 November 2015.

52. Sun, J., Huang, C.K., Schechter, D. "Sensitivity Analysis of Unstructured Meshing Parameters on

Production Forecast of Hydraulically Fractured Horizontal Wells" presented at the Abu Dhabi International Petroleum Exhibition and Conference, 9 - 12 Nov 2015.

53. Alvarez, J.O. and Schechter, D.S. Wettability Alteration and Spontaneous Imbibition in Unconventional Liquid Reservoirs by Surfactant Additives. Society of Petroleum Engineers. DOI: 10.2118/177057-MS. 2015.

54. Sun, J., Huang, C.-K., Schechter, D.S. Sensitivity Analysis of Unstructured Meshing Parameters on Production Forecast of Hydraulically Fractured Horizontal Wells. Presented at the Abu Dhabi International Petroleum Exhibition and Conference, Abu Dhabi, UAE, 9-12 November. SPE-177480-MS. 2015.

55. Alvarez, J.O., Neog, A., Jais, A. and Schechter, D.S. Impact of Surfactants for Wettability Alteration in Stimulation Fluids and the Potential for Surfactant EOR in Unconventional Liquid Reservoirs. Society of Petroleum Engineers. DOI: 10.2118/169001-MS. 2014.

56. Sun, J., Schechter, D. S. Optimization-Based Unstructured Meshing Algorithms for Simulation of Hydraulically and Naturally Fractured Reservoirs with Variable Distribution of Fracture Aperture, Spacing, Length and Strike. Presented at the SPE Annual Technical Conference and Exhibition, Amsterdam, The Netherlands, 27-29 October. 2014.

57. Sun, J., Schechter, D., Hu, K. et al. Investigating the Effect of Improved Fracture Conductivity on Production Performance of Hydraulic Fractured Wells through Field Case Studies and Numerical Simulations. Presented at the SPE Hydrocarbon Economics and Evaluation Symposium, Houston, Texas, 19-20 May. 2014.

58. Li, W., Sun, J., Schechter, D.S. et al. Polymer-Alternating-Gas Simulation: A Case Study. Presented at the SPE EOR Conference at Oil and Gas West Asia, Muscat, Oman, 31 March-2 April. SPE-169734-MS. 2014

59. Li, W. and Schechter, D. S. "Using Polymer-WAG to Maximize CO_2 Flooding Performance for Light Oils," SPE 169942 presented at the SPE Trinidad & Tobago Energy Resources Conference at Port of Spain, Trinidad and Tobago, June 9 – June 11, 2014.

60. Li, W. and Schechter, D. S. "Feasibility Study of Polymer Alternative Gas Flooding in Heavy Oils," SPE 170107 presented at the SPE Heavy Oil Conference- Canada at Calgary, Alberta, Canada, June 10 – June l2, 2014.

61. Li, W., Dong, Z., Sun, J. and Schechter, D. S. "Polymer Alternating Gas Simulation – A Case Study," SPE 169734 presented at the SPE EOR Conference at Oil and Gas West Asia, Muscat, Oman, March 31 – April 2, 2014.

62. Tovar, F., Eide, O, Graue, A. and Schechter, D. S. "Experimental Investigation of Enhanced Recovery in Unconventional Liquid reservoirs using CO_2: A Look Ahead to the Future of Unconventional EOR," SPE 169022 presented at the SPE Unconventional Resources Conference, The Woodlands, TX, April 1 – 3, 2014.

63. Tovar, F., Barrufet, M. and Schechter, D. S. "Long Term Stability of Acrylamide Based Polymers during Chemically Assisted CO_2 WAG EOR," SPE 169053 presented at the SPE Improved Oil Recovery Symposium, Tulsa, OK, April 12 – 16, 2014.

64. Alvarez, J., Neog, A, Jais, A, and Schechter, D. S. "Impact of Surfactants for Wettability Alteration in Stimulation Fluids and the Potential for Surfactant EOR in Unconventional Liquid Reservoirs," paper presented at the SPE Unconventional Resources Conference, The Woodlands, TX, April 1 – 3, 2014.

65. Yunsuk, H., Lin, J., Zhu, D. and Schechter, D.S., "Predicting Well Performance in Naturally Fractured Reservoirs," paper presented at the Petroleum Technology Conference, Bejing, China, March 26 – 28, 2013.

66. Ali, H.A., Schechter, D.S., and Lane, R.H., "Application of Polymer Gels as Conformance Control Agents for CO_2 EOR Floods," paper presented at the SPE International Oilfield Chemistry Symposium, The Woodlands, TX, April 8–10, 2013.

67. Alkouh, A., Schechter, D.S., Wattenbarger, R.A., Patel, K., "Practical Use of Simulators for Characterization of Shale Reservoirs," SPE 162645 presented at Canadian Unconventional Resources Conference, Calgary, AB, Oct. 30 – Nov. 1, 2012.

68. Pfeiffer, T., Reza, Z., McCain, W.D., Schechter, D. S., Mullins, O.C. "Determination of Fluid Composition Equilibrium - a Substantially Superior Way to Assess Reservoir Connectivity," Paper presented at the SPWLA 52nd Annual Logging Symposium, Colorado Springs, CO, USA, 2012.

69. Pfeiffer, T., Reza, Z., McCain, W.D., Schechter, D. S., Mullins, O.C. "Fluid Composition Equilibrium; a Proxy for Reservoir Connectivity," SPE 145703, Paper presented at the SPE Offshore Europe Oil and Gas Conference and Exhibition held in Aberdeen, UK, 6-8 September, 2011.

70. Pfeiffer, T., Reza, Z., McCain, W.D., Schechter, D. S., Mullins, O.C. "Determination of Fluid Composition Equilibrium under Consideration of Asphaltenes," SPE-145609-PP, Paper presented at the Annual Technical Conference and Exhibition held in Denver, Colorado 2011.

71. Schechter, D.S. and Cai, S., "Improved CO_2 Flooding Efficiency using Cross-Linked Gel

Conformance Control and CO_2 Viscosifier Techniques," presentation at the 2011 SPE Annual Technical Conference and Exhibition held in Denver, Colorado, 30 Oct. – 3 November 2011.

72. Aleidan, A. Mamora, D. and Schechter, D.S., "Experimental and Numerical Simulation Studies of Different Modes of CO_2 Injection in Fractured Carbonate Cores" SPE 143512 presented at 2011 Enhanced Oil Recovery Conference in Kuala Lumpar, Malaysia, 19-21, July 2011.

73. Bataweel, M., Nasr-El-Din, H. and Schechter, D.S., "Fluid Flow Characterization of Chemical EOR flooding: A Computerized Tomography (CT) Scan Study" presented at 2011 Technical Symposium and Exhibition of the SPE Saudi Arabia Section/Dhahran Geosciences Society, Al-Khobar, Saudi Arabia, 15-18, May, 2011.

74. Nawaf, A.S. and Schechter, D.S., "Simulation Study to Investigate the Effect of Natural Fractures on the Performance of Surfactant-Polymer Flood in Carbonate Reservoirs." presented at 2011 SPE/DGS Annual Technical, Al-Khobar, Saudi Arabia, 3-6, April 2011.

75. Kim, T.H. & Schechter, D.S., "Estimation of Fracture Porosity of Naturally Fractured Reservoirs with No Matrix Porosity Using Fractal Discrete Fracture Networks", SPE 110720 presented at the 2007 SPE Annual Technical Conference and Exhibition held in Anaheim, California, U.S.A., 11–14 November 2007.

76. Chakravarthy, D., Muralidharan, V., Putra, E., and Schechter, D.S.: "Mitigating Oil Bypassed in Fractured Cores during CO_2 Flooding using WAG and Polymer Gel Injection," paper SPE/DOE 97228 presented at 2006 Improved Oil Recovery Symposium, 22-26 April 2006

77. Muralidharan, V., Chakravarthy, Putra, E., and Schechter, D.S.: "Simulation of Fluid Flow through Rough Fractures," paper SPE 89941 presented at the 2004 SPE International Petroleum Conference, Puebla, Mexico, 8–9, November 2004.

78. Muralidharan, V., Chakravarthy, Putra, E., and Schechter, D.S.: "Investigating Fracture Aperture Distribution Under Various Stress Conditions Using X-Ray CT Scanner," paper CIPC 2004-230 presented at the 2004 Annual Technical Meeting of the Petroleum Society, Calgary, C Analyzing Scale da 8–10, June 2004.

79. Muralidharan, V., Putra, E., and Schechter, D.S.: "Experimental and Simulation Analysis of Fractured Reservoir Experiencing Different Stress Conditions," paper CIPC 2004-229 presented at 2004 Annual Technical Meeting of the Petroleum Society, Calgary, Canada, 8-10 June.

80. Chakravarthy, D., Muralidharan, V., Putra, E., and Schechter, D.S.: "Application of X-Ray CT for Investigating CO2 and WAG Injection in Fractured Reservoirs," paper CIPC 2004-232 presented at 2004 Annual Technical Meeting of the Petroleum Society, Calgary, Canada, 8-10 June.

81. Tellapaneni, P.K., Putra, E., and Schechter, D.S.: "Usage of X-Ray CT for Empirical Transfer Functions in Dual Porosity Simulation," paper CIPC 2004-246 presented at 2004 Annual Technical Meeting of the Petroleum Society, Calgary, Canada, 8-10 June.

82. Kaul, S.P., Putra, E., and Schechter, D.S.: "Spontaneous Imbibition Simulation with Rayleigh-Ritz Finite Element Method," paper SPE 90053 presented at the 2004 SPE International Petroleum Conference, Puebla, Mexico, 8–9, November 2004.

83. Chong, E. E., Syihab, Z., Putra, E and Schechter, D.S.: "A Unique Grid-Block System for Improved Grid Orientation," SPE 88617 presented at the 2004 SPE Asia Pacific Oil and Gas Conference and Exhibition (APOGCE), Perth, Australia, October 18 - 20, 2004.

84. Alfred, D., Putra, E. and Schechter, D.S., "Modeling Fluid Flow Through a Single Fracture Using Experimental, Stochastic, and Simulation Approaches," SPE 89442 presented at the 2004 SPE/DOE Improved Oil Recovery Conference, Tulsa, OK. April 3 – 6, 2004.

85. Muralidharan, V., Chakravarthy, D., Putra, E., and Schechter, D.S.: "Simulation and Imaging Experiments for Flow through a Fracture Surface: A New Perspective" paper SPE presented at 2004 International Student Paper Contest, Houston, Texas, 26-29 September 2004.

86. Muralidharan, V., Putra, E., and Schechter, D.S.: "Experimental and Simulation Analysis of Fractured Reservoir Experiencing Different Stress Conditions," CIPC Paper No. 2004-229, 55th Annual Technical Meeting for the Canadian International Petroleum Conference, Calgary, CA. June 8 – 10, 2004.

87. Chakravarthy, D., Muralidharan, V., Putra, E., and Schechter, D.S.: "Application of X-Ray CT for Investigation of CO_2 and WAG Injection in Fractured Reservoirs," CIPC Paper No. 2004-232, 55th Annual Technical Meeting for the Canadian International Petroleum Conference, Calgary, CA. June 8 – 10, 2004.

88. Muralidharan, V., Putra, E., and Schechter, D.S.: "Investigating Fracture Aperture Distributions Under Various Stress Conditions Using X-Ray CT Scanner," CIPC Paper No. 2004-230, 55th Annual Technical Meeting for the Canadian International Petroleum Conference, Calgary, CA. June 8 – 10, 2004.

89. Tellapaeni, P., Putra, E. and Schechter, D.S. "Usage of X-Ray CT for Empirical Transfer Functions in Dual Porosity Simulation, CIPC Paper No. 2004-246, 55th Annual Technical Meeting for the Canadian International Petroleum Conference, Calgary, CA. June 8 – 10, 2004.

90. Kaul, S. P., Putra, E., Schechter, D. S., "Simulation of Spontaneous Imbibition Using Rayleigh-Ritz

Finite Element Method – A Discrete Fracture Approach," CIPC Paper No. 2004-228, 55th Annual Technical Meeting for the Canadian International Petroleum Conference, Calgary, CA. June 8 – 10, 2004.

91. Alfred, D., Putra, E. and Schechter, D.S., "Transcending Conventional Log Interpretation: A New Water Saturation Model for the Spraberry Trend Area" presented at the Oklahoma Geological Society's Conference on Naturally Fractured Reservoirs, Oklahoma City, OK, June 3-4, 2002.

92. Chowdhury, T., Putra, E. and Schechter, D.S., "Improved Dual-Porosity Simulation in Naturally Fractured Reservoirs" presented at the Oklahoma Geological Society's Conference on Naturally Fractured Reservoirs, Oklahoma City, OK, June 3-4, 2002.

93. Schechter, D.S., "Analysis of Waterflood Performance in the Spraberry Trend Area" presented at the Oklahoma Geological Society's Conference on Naturally Fractured Reservoirs, Oklahoma City, OK, June, 3-4, 2002.

94. Chowdhury, T., Dabiri, G., Putra, E., and Schechter, D.S.: "Improving Waterflood Performance in the Naturally Fractured Spraberry Trend Area," paper presented at the Conference on Naturally Fractured Reservoirs, Oklahoma, June 3-4, 2002

95. Baker, R.O., Bora, R., Schechter, D.S., Knight, W.H., Leonard, P., and Rounding, C. "Development of a Fracture Model for the Spraberry Field, Texas USA," SPE 71635 presented at the SPE Annual Technical Conference and Exhibition, New Orleans, LA, Sept. 30 - Oct. 3, 2001.

96. D.S. Schechter, E. Putra, R.O. Baker, W.H. Knight, W.P. McDonald, P. Leonard, and C. Rounding, "CO_2 Pilot Design and Water Injection Performance in the Naturally Fractured Spraberry Trend Area, West Texas," SPE 71605 presented at the SPE Annual Technical Conference and Exhibition, New Orleans, LA, Sept. 30 - Oct. 3, 2001.

97. H. Li, Schechter, D.S., E. Putra, and R. Grigg R., "Experimental Investigation of CO_2 Gravity Drainage in a Fractured System," SPE 64510 presented at the SPE Annual Technical Conference and Exhibition, San Antonio, TX, Oct. 6-9, 2000.

98. Putra, E., Y. Fidra, and Schechter, D.S., "Use of Experimental and Simulation Results for Estimating Critical and Optimum Water Injection Rates in Naturally Fractured Reservoirs," SPE 56431 presented at the SPE Annual Technical Conference and Exhibition, Houston, TX, Oct. 3 - 6, 1999.

99. Putra, E. and Schechter, D.S., "Reservoir Simulation of a Waterflood Pilot in Naturally Fractured Spraberry Trend," SPE 54336 presented at the SPE Asia Pacific Oil and Gas Conference and

Exhibition, Jakarta, Indonesia, April 20 - 22, 1999.

100. Schechter, D.S., B. Guo and R. Grigg, "Wellman Unit CO_2 Flood: Reservoir Pressure Reduction and Flooding the Water/Oil Transition Zone," SPE 48948 presented at the SPE Annual Technical Conference and Exhibition, New Orleans, LA, Sept. 27 - 30, 1998.

101. Schechter, D.S. and B. Guo, "An Integrated Investigation for Design of a CO_2 Pilot in the Naturally Fractured Spraberry Trend Area West Texas," SPE 39881 presented at the SPE International Petroleum Conference and Exhibition, Villahermosa, Mexico, March 3 - 5, 1998.

102. Guo, B., Schechter, D. S. and A. Banik "Use of Single-Well Test Data for Estimating Permeability Anisotropy in the Naturally Fractured Spraberry Trend Area Reservoirs," SPE 39807 presented at the Permian Basin Oil & Gas Recovery Conference, Midland, TX, March 27–29, 1998.

103. Guo, B., and Schechter, D.S., and R.O. Baker "An Integrated Study of Imbibition Waterflooding in the Naturally Fractured Spraberry Trend Area Reservoirs," SPE 39801 presented at the Permian Basin Oil & Gas Recovery Conference, Midland, TX, March 27–29, 1998.

104. Schechter, D.S., McDonald, P., Sheffield, T., and Baker, R., "Integration of Laboratory and Field Data for Development of a CO_2 Pilot in the Naturally Fractured Spraberry Trend," SPE 36657 presented at the SPE Annual Technical Conference and Exhibition, Denver, CO, Oct. 3 - 6, 1998.

105. Baker, R.O., N.K. Spenceley, B. Guo and D.S. Schechter "Using an Analytical Decline Model to Characterize Naturally Fractured Reservoirs," SPE 39623 presented at the Permian Basin Oil & Gas Recovery Conference, Midland, TX, March 27–29, 1998.

106. E. Putra, Y. Fidra, and Schechter, D.S., "Study of Waterflooding In Naturally Fractured Reservoirs From Static And Dynamic Imbibition Experiments," paper SCA 9910 presented at the Society of Core Analysts, Denver CO., Aug. 10 – 12, 1997.

107. Schechter, D. S., Banik, A.K. "Integration of Petrophysical and Geological Data with Open-Hole Logs for Identification of the Naturally Fractured Spraberry Pay Zones," SPE 38913 presented at the SPE Annual Technical Conference and Exhibition, San Antonio, TX, Oct. 5 - 8, 1997.

108. Grigg, R.B. and Schechter, D.S. "State of the Industry in CO_2 Floods," SPE 38849 presented at the SPE Annual Technical Conference and Exhibition, San Antonio, TX, Oct. 5 - 8, 1997.

109. McDonald, W.P., Lorenz, J., Schechter, D.S., Sizemore, C. and Sheffield, T "Fracture Characterization Based on Oriented Horizontal Core from the Spraberry Trend Reservoir: A Case Study," SPE 38664 presented at the SPE Annual Technical Conference and Exhibition, San Antonio, TX, Oct. 6-9, 1997.

110. Guo, B. and Schechter D. S "Use of a Simple Mathematical Model for Estimating Formation Damage in Wells Intersecting Long Fractures," SPE 38178 presented at the SPE Annual Technical Conference and Exhibition, San Antonio, TX, Oct. 6-9, 1997.

111. Guo, B. and Schechter, D.S. "A Simple and Rigorous Mathematical Model for Estimating Inflow Performance of Wells Intersecting Long Fractures," SPE 38104 presented at the SPE Annual Technical Conference and Exhibition, San Antonio, TX, Oct. 6-9, 1997.

112. Guo, B and Schechter, D.S., "A Simple and Accurate Method for Determining Low IFT from Pendant Drop Measurements," SPE 37216 presented at the SPE International Symposium on Oilfield Chemistry, Houston, TX, Feb. 18-21, 1997.

113. Banik, A.K. and Schechter, D.S., "Utilization of Old Cased-Hole Logs for Characterization of the Naturally Fractured Spraberry Trend Area," presented at the West Texas Geological Society Meeting, Oct. 28 – 30, 1996.

114. Schechter, D.S. and Banik, A.K. "Characterization of the Naturally Fractured Spraberry Trend Shaly Sands Based on Core and Log Data," SPE 35224 presented at the 1996 Permian Basin Oil & Gas Recovery Conference, Midland, TX, March 27–29, 1996.

115. Schechter, D.S., McDonald, P., Sheffield, T., and Baker, B. "Reservoir Characterization and CO_2 Pilot Design in the Naturally Fractured Spraberry Trend Area," paper SPE 35469 presented at the 1996 Permian Basin Oil & Gas Recovery Conference, Midland, TX, March 27–29, 1996.

116. Schechter, D.S. and Guo, B., "Mathematical Modeling of Gravity Drainage After Gas Injection Into Fractured Reservoirs" SPE 35170 presented at the 1996 Improved Oil Recovery Symposium, Tulsa, OK, April 22–24, 1996.

117. Guo, B and Schechter, D.S., "A Simple and Accurate Method for Determining Low IFT from Pendant Drop Measurements," SPE 37216 presented at the 1997 SPE International Symposium on Oilfield Chemistry, Houston, TX, Feb. 18-21, 1996.

118. Schechter, D.S. and Guo, B., "Parachors Based on Modern Physics and Their Uses in IFT Prediction of Reservoir Fluids," SPE 30785 presented at the 1995 SPE Annual Technical

Conference and Exhibition, Dallas, Oct. 22–25, 1995.

119. Schechter, D.S., Zhou, D. and Orr, F.M., Jr., "Capillary Imbibition and Gravity Segregation in Low IFT Systems," SPE 22594 presented at the 1991 SPE Annual Technical Conference and Exhibition, Dallas, Oct. 6–9, 1991.

Patents

United States Patent Number 5,314,017, "Method of Assisting the Recovery of Petroleum in Vertically Fractured Formations Utilizing Carbon Dioxide Gas to Establish Gravity Drainage." May 24, 1994

Research Funding

Grant Type Federal/State/ Industry/Other	External or Internal E/I	Dates of the Award	Funding Agency/Entity	Role: PI/Co-PI/ Co-I	Title of Grant	Award Amount
Federal/Industry	External	9/1995-9/2000	DOE-NPTO/Pioneer	**PI**	CO2 Injection in the Naturally Fractured Spraberry Trend Area	$13,100,000
Federal/Industry	External	9/2000 - 8/2003	DOE-NPTO/Pioneer	**PI**	Preferred Waterflood Management Practices for the Spraberry Trend Area	$2,073,232
Federal/Industry	External	9/2001 – 9/2004	DOE-NPTO/Pioneer	**PI**	Investigation of Efficiency Improvements during CO2 Injection in Hydraulically and NFR	$1,171,829
Industry	External	9/2001 - 9/2002	Loma Oil Co.	**PI**	Improved Recovery in the Pettis Sandstone	$23,411
Industry	External	2/2010 - 2/2011	EOG Resources	**PI**	Use of Surfactants in Fracturing Fluids for Improved Performance in the Barnett Shale	$70,000

Industry	External	2/2011 - 2/2013	Korean NOC	**PI**	Study of CO2 Flood EOR Possibilities in KNOC Operated Fields	$120,000
Industry	External	5/2012 - 12/2013	Forest Oil Co	**PI**	Integration of Data for Development of a Simulation Model for the Washburn Formation	$50,000
Industry	External	7/2011 – 7/2014	Chaparral Energy Co.	**PI**	CO2 Injection in the North Burbank Unit	$1,750,000
Industry	External	8/2011 – 8/2015	Pioneer Natural Resources	**PI**	Simulation of Discrete Fracture Networks with Application to the NF Spraberry Trend Area	$450,000
Industry	External	9/2012 - 5/2014	Pioneer Natural Resources	**PI**	Surfactant Frack Fluid Investigation in Wolfcamp	$57,800
Industry	External	NA	Chevron	**Co-PI**	Chevron Imaging Center Scanner Update with Micro and Conventional CT Tomography	$800,000
Industry	External	9/2014 - 5/2016	Conoco Phillips	**PI**	CO2 EOR in Unconventional in Liquid Reservoirs	$97,416
Industry	External	9/2014 - 5/2016	Kinder Morgan	**PI**	Capillary Pressure Investigation of Brine-Super Critical CO2 Reservoirs	$193,850
Industry	External	6/2016 - 12/2018	Nexen	**PI**	Use of Surfactant Additives for Investigation of Improved Well Performance	$150,000
Industry	External	4/2016 - 9/2017	Pioneer Natural Resources	**PI**	Wolfcamp Optimization with Anionic Surfactants	$75,000
Industry	External	2/2016 - 9/2017	Zeus Oil Co.	**PI**	Development of Targeted Discovery Wells in Paraguay	$75,000
Industry	External	9/2017 - 9/2018	Flotek	**PI**	Anionic and Nonionic surfactants for improvement of Flowback Performance	$150,000
Industry	External	9/2017 - 12/2018	Nexen	**PI**	Surfactant Pilot Design in Unconventional	$150,000

					Reservoirs Performance	
Industry	External	9/2017 - 12/2019	Halliburton	**PI**	Rich Gas Injection for EOR with Surfactant Foam	$251,381
Industry	External	9/2017 - 9/2018	Flotek	**PI**	Complex Nano-Surfactants for Improvement of Completion Performance	$132,000
Federal/Industry	External	4/1/2018 - 3/31/2022	DOE	**Co-PI**	The Eagle Ford Shale Laboratory	$3,400,000
Industry	External	5/2021- 5/2023	Third Wave	**PI**	Surfactant Design for Wettability Alteration	$120,000
Industry	External	5/1/2025 – 5/1/2026	Diamondback Energy	**PI**	Surfactant Design for Wolfcamp Reservoirs	126,000
					Total	**$24,586,919**

Student Advising

A. Masters

	Student	Degree	Title	Graduation
1.	Isaiah Zafer Ataceri	M.S.	Design of High-Pressure High Temperature Surfactant Formulations for EOR	May 2022
2.	Omar Ali Mohamed Abdelwahab	M.S.	Managing Water Resources by Implementation of Water Shut-Off	May 2022
3.	Aashrit Bagareddy	M.S.	Design, Implementation and Diagnostics of a Surfactant EOR Pilot in the Eagle Ford Reservoir	Aug 2021
4.	Elsie Ladan	M.S.	Wettability Alteration with Nonionic Surfactants at HTHP	Aug 2021
5.	Tobi Adebisi	M.S.	Wettability Alteration with Ionic Surfactants at HTHP	Aug 2021
6.	Jingjing Zhang	M.S.	Simulation of Discrete Fracture Networks for EOR Applications	Dec 2020
7.	Weidong Chen	M.S.	Optimization of EO Groups in Nonionic Surfactants for Wettability Alteration	May 2020
8.	Brian Woody Wu	M.S.	Surfactant Interaction in the Merremac Formation	Aug 2019
9.	Hassan Al Hashim	M.S.	Surfactant Assisted Spontaneous	Aug 2019

			Imbibition using Unique Analytical Methods	
10.	Benjamin Hoffman	M.S.	Classification of Decline Curves in Wells Treated with Surfactant-Bearing Completion Fluids	May 2018
11.	Kang H. Park	M.S.	Optimization of Completion Fluids in the Naturally Fractured Wolfcamp Formation	May 2018
12.	Wayan Saputra	M.S.	Modeling Imbibition of Complex Nano-Fluids and Surfactants into Unconventional Naturally Fractured Reservoirs	May 2018
13.	Imad Adel	M.S.	A Reliable and Rapid Technique for the Laboratory Determination of the Minimum Miscibility Pressure for CO_2 – Light Crude Oil Systems Using the Slim Tube Method	May 2018
14.	De Barros Barreto Scavone, Ignacio	M.S.	Development of Unconventional Resources in Paraguay	May 2018
15.	Hee Yang	M.S.	Experimental Investigation of Brine - CO_2 Capillary Pressure in a Super-Critical CO_2 Reservoir	May 2017
16.	Erick Martinez	M.S.	Investigation of Remaining Saturation from Gas Gravity Drainage Based on Time Lapse X-Ray CT Tomography with Application in Naturally Fractured Reservoirs	May 2017
17.	Pedro Sanchez	M.S.	Monitoring of the Dynamic Gas-Oil Contact Displacement for Wells in Naturally Fractured Reservoirs by Analyzing Production Tubing Data	May 2017
18.	Uriel Salazar	M.S.	CO_2 Injection in Unconventional Reservoirs: Chicontepec Turbidites Case Study	May 2017
19.	Hongyu Tian	M.S.	Characterization of Fractured Reservoirs in Ultra-Deep Carbonate Buried-Hills, Langgu Depression, China	Dec 2016
20.	Tuan Phi	M.S.	CO_2 EOR Simulation in Unconventional Liquid Reservoirs: An Eagle Ford Case Study	August 2016
21.	Mohit Dholi	M.S.	Prediction of Estimated Ultimate Recovery	May 2016

			in the Eagle Ford	
22.	Dimitrios Karapafalis	M.S.	Water Injection Efficiency in Offshore, Soft Sediment Miocene Reservoirs	May 2016
23.	Valluri, Manoj	M.S.	Determination of Optimal Surfactants for Fracturing Fluids in the Eagle Ford	May 2016
24.	Amy Zou	M.S.	Compositional Simulation of CO_2 Enhanced Oil Recovery in Unconventional Liquid Reservoirs	May 2015
25.	Anirban Neog	M.S.	Investigating the Potential of Surfactants in Improving the Performance of Stimulation Fluids in Ultra-tight Shales	May 2014
26.	Basel Alotaibi	M.S.	Production Forecast, Analysis and Simulation of Eagle Ford Shale Oil	May 2014
27.	Hussain Aldaif	M.S.	Analysis of Water Flowback Data in Gas Shale Reservoirs	May 2014
28.	Akshay Nilangekar	M.S.	Reservoir Characterization and Waterflood Performance Evaluation of Granite Wash Formation, Anadarko Basin	Dec 2013
29.	***Francisco Tovar	M.S.	Experimental Determination of CO_2 Flood Performance in the North Burbank Unit	Dec 2013
30.	Aymen Alramadham	M.S.	Interpretation, Analysis and Design of Inter-Well Tracer Tests in Naturally Fractured Reservoirs	August 2013
31.	Ufuk Kilicasaln	M.S.	Dynamic Reservoir Characterization Of Naturally Fractured Reservoirs From An Inter-Well Tracer Test	August 2013
32.	Edith Sotelo Gamboa	M.S.	Natural Fracture Characterization by Source Mechanism Estimation and Semi-Stochastic Generation of Discrete Fracture Networks Using Microseismic and Core Data	Dec 2013
33.	Hussain Aljeshi	M.S.	Fracture Detection and Water Sweep Characterization Using Single-well Imaging, Vertical Seismic Profiling and Cross-dipole Methods in Tight and Super-k Zones, Haradh II, Saudi Arabia	Dec 2013
34.	Ali Al Ali	M.S.	CO_2 Injection Layered Syems Using Polymers during WAG Cycle for Mobility Control	August 2012
35.	Zuhair Al Yousef	M.S.	Use of Viscosifiers for Improved Sweep Efficiency during CO_2 Injection in Layered	August 2012

			Systems	
36.	Jin Gu Kim	M.S.	Sensitivity of Numerical Simulation to Natural Fracture Parameters in Oil Shale	May 2012
37.	Joachim Ogbechie	M.S.	Development of Discrete Fracture Networks for Shale Gas Systems with Application to the Eagleford Shale	May 2011
38.	Thomas Pfeiffer	M.S.	Equilibrium and Disequilibrium in Reservoirs with Compositional Gradients	Dec 2010
39.	Shuzong Cai	M.S.	CO_2 Mobility Control in Heterogeneous and Fractured Systems	May 2010
40.	Michael Marek	M.S.	Determination of Optimum Mobility Control for CO_2 Enhanced Oil Recovery	May 2010
41.	David Moyer	M.S.	Survey of CO_2 Enhanced Oil Recovery Projects Worldwide	May 2009
42.	Ibrahim Akassim	M.S.	Structural and Production Analysis of the Barnett Shale	May 2009
43.	Aubrey Schellhorn	M.S.	Core and Log Analysis of the Truelove Field	July 2008
44.	Vaibhav Deshpande	M.S.	Production Data Analysis in the Barnett Shale	December 2007
45.	Amer Abu-Hassoun	M.S.	Reservoir Modeling of Super-K Zones in Saudi Arabia	August 2007
46.	Moses Nduonyi	M.S.	Simulation of a Carbonate Reservoir in Kansas	August 2007
47.	Matthew Gross	M.S.	Discrete Fracture Modeling for Fractured Reservoirs Using Voronoi Grid Blocks	December 2005
48.	Ricardo Gavira	M.S.	Reservoir Simulation of CO_2 Sequestration and Enhanced Oil Recovery in the Tensleep Formation, Teapot Dome Field	August 2005
49.	Laura Garcia Perez	M.S.	Integration of Well Test Analysis Into Naturally Fractured Reservoir Simulation	August 2005
50.	Marylena Garcia	M.S.	Optimization of CO_2 Flood Design in the Wasson Field, West Texas	May 2005
51.	Deepak Chakravarthy	M.S.	Use of X-Ray Tomography in CO_2 Bypassing Studies	May 2005
52.	Orkhan Pashayev	M.S.	Simulation of Water Injection in Fractured Carbonate Reservoirs	May 2004
53.	Mirko Hernandez	M.S.	Development Strategies for the Shallow Pettus Sandstone	May 2004
54.	Emeline Chong	M.S.	Flexible Gridding Techniques to Reduce the Grid Orientation Effect	May 2004
55.	Saeed Forghany	M.S.	IMPES Modeling of Volumetric Dry Gas	May 2004

			Reservoirs with Mobile Water	
56.	Prasanna Tellapaneni	M.S.	Quantification of Transfer Mechanism in Naturally Fractured Reservoirs	May 2003
57.	Dicman Alfred	M.S.	Stochastic Representation of Fracture Heterogeneity	May 2003
58.	Christian Huapaya Lopez	*M.S.	A Study of Imbibition in Fractured Systems	May 2003
59.	Vivek Muralidharan	M.S.	X-Ray CT Scan Monitoring of Saturation Profiles in Fractured Core Samples	May 2003
60.	Erwin Hernandez	M.S.	OFM Database Management of the Germania Unit Spraberry Waterflood West Texas	December 2003
61.	Muhammad Alrumah	**M.S.	Neural Networks for Determination of Inflow Performance Curves	December 2003
62.	Babajide Olumide	M.S.	Petrophysical Characterization of CO_2 Pilot Area in the Spraberry O'Daniel Unit	December 2003
63.	Sandeep Kaul	M.S.	Numerical Simulation Of Two-Phase Flow In Discrete Fractures Using Rayleigh-Ritz Finite Element Method	December 2003
64.	Gokul Lakshman (deceased)	M.S.	Performance Review of Upper Spraberry CO_2 Pilot by Integrating Production, Log and Gas Sampling Data	December 2002
65.	Jose Barile	M.S.	Design and History Matching of Waterflood/Miscible CO_2 Flood Model of a Mature Field: The Wellman Unit, West Texas	August 2002
66.	Tanvir Chowdhury	M.S.	Improvement of Dual-Porosity Simulation in the Naturally Fractured Spraberry Trend Area	August 2002

67.	Adgoke Dabiri	M.S.	Development of Optimized Waterflood Patterns for the Naturally Fractured Spraberry Trend Area	May 2002
68.	Claudio Saleta	M.S.	Petrography, Diagenesis and Reservoir Quality of the Upper Spraberry Formation, TX	May 1999
69.	Jenny Cherney	M.S.	Mechanical Stratigraphy Studies in Naturally Fractured Reservoir Rocks and the Effect on Reservoir Behavior	May 1999
70.	Yan Fidra	M.S.	A Study of Imbibition Mechanisms in the Naturally Fractured Spraberry Trend Area	August 1997
71.	Eva Malmanger	M.S.	Statistical Analysis and Simulation of Stress Sensitive Natural Fractures	May 1997
72.	Eli Kindem	M.S.	Numerical Simulation of Waterflooding in the Naturally Fractured Spraberry Trend	May 1996
73.	Inghild Storenson	M.S.	A Study of Recovery Mechanisms during Gas Injection in Naturally Fractured Reservoirs	May 1996

* Committee Co-Chair with Dr. R. Wattenbarger
** Committee Co-Chair with Dr. R. Startzman
*** Joint Chair with Maria Barrufet

A. Doctorate

	Student	Degree	Title	Graduation
1.	Edem Mensah	Ph.D.	Surfactant Desing for Wolfcamp Reservoirs	May 2027
2.	Rohan Vijapurapu	Ph.D.	Hybrid Implementation of Gas Injection and Surfactant Assisted Spontaneous Imbibition	May 2024
3.	Wayan Saputra	Ph.D.	Experimental and Numerical Investigation of Surface Active Agents for Wettability Alteration in Oil-Wet Unconventional Reservoir Rock	May 2022
4.	Imad Adel	Ph.D.	Miscible Gas Injection with Aqueous Phase Surfactants	May 2020
5.	Fan Zhang	Ph.D.	Scaling Spontaneous Imbibition Laboratory Data to Field in Unconventional Liquid Reservoir by Surfactant Additives	Dec 2019

6.	Geng Niu	Ph.D.	Analysis of Micro-Seismic Pumping Schedules to Build Complex Discrete Fracture Networks	May 2019
7.	Pahala Sinurat	Ph.D.	Petrophysical Analysis of Dolomitic and Limestone Facies in a Supercritical CO_2 Reservoir	Dec 2018
8.	Sergei Parsegov	Ph.D.	Mechanical Behavior of Natural Fractures during Hydraulic Fracturing in a Naturally Fractured Reservoir	Feb 2019
9.	Zuhair Al Yousef	Ph.D.	Nanoparticles and Surfactants - Stabilized Gas-Liquid Foam/Emulsion for Gas Mobility Control in Petroleum Reservoirs	May 2018
10.	Mohammed Almobarky	Ph.D.	Investigation of CO_2 Flood Performance in the North Burbank Unit	May 2018
11.	*Francisco Tovar	Ph.D.	Diffusive and Darcy Flow Regimes during Gas Injection in Naturally Fractured Unconventional Liquid Reservoirs	May 2018
12.	Johannes Alvarez	Ph.D.	Wettability Alteration Using Surfactants to Improve Oil Recovery from Unconventional Liquid Reservoirs	Dec 2018
13.	Sangyup Lee	Ph.D.	Development of Equivalent Permeability calculation and Iteratively Coupled Fluid Flow and Geomechanics Simulation Codes by Using Fractal and Statistical Methods	Dec 2016
14.	Jianlei Sun	Ph.D.	Characterization and Simulation of Discrete Fracture Networks in Unconventional Shale Reservoirs	Dec 2016
15.	Weirong Li	Ph.D.	Using Polymer to Maximize CO2 Flooding Performance in Light Oils	May 2016
16.	Zuher Syihab	Ph.D.	Development of a Unique Grid System to Simulate Discrete Fracture Networks	Dec 2010
17.	Tae-Hyung Kim	Ph.D.	Numerical Modeling of Stress Sensitivity for Waterflood Simulation in Naturally Fractured Reservoirs	Dec 2007
18.	Jeongyu Seoung	*Ph.D.	Simulation of X-Ray CT Scan CO_2 Sequestration	Dec 2003
19.	Erwin Putra	Ph.D.	Numerical Modeling of Stress Sensitivity and Imbibition Experiments for Waterflood Simulation in Naturally	May 1998

			Fractured Reservoirs: A Case Study from the Spraberry Trend Area, West Texas	

* Co-chair with Dr. Barrufet

Teaching

Courses taught at Texas A&M University

Course	Description	Semester/Year	Number Students
Pete 401	Reservoir Simulation	FA 2000	33
Pete 321	Formation Evaluation	SP 2001	34
Pete 400	Reservoir Description	SP 2001	25
Pete 401	Reservoir Simulation	FA 2001	35
Pete 321	Formation Evaluation	SP 2002	35
Pete 400	Reservoir Description	SP 2002	30
Pete 619	Naturally Fractured Reservoirs	FA 2002	15
Pete 401	Reservoir Simulation	FA 2002	40
Pete 321	Formation Evaluation	SP 2003	43
Pete 400	Reservoir Description	SP 2003	44
Pete 619	Naturally Fractured Reservoirs	FA 2003	16
Pete 401	Reservoir Simulation	FA 2003	42
Pete 321	Formation Evaluation	SP 2004	76
Pete 400	Reservoir Description	SP 2004	35
Pete 619	Naturally Fractured Reservoirs	FA 2004	22
Pete 401	Reservoir Simulation	FA 2004	41
Pete 321	Formation Evaluation	SP 2005	88
Pete 400	Reservoir Description	SP 2005	32
Pete 619	Naturally Fractured Reservoirs	FA 2005	18
Pete 401	Reservoir Simulation	FA 2005	40
Pete 321	Formation Evaluation	SP 2006	111
Pete 400	Reservoir Description	SP 2006	41
Pete 401	Reservoir Simulation	FA 2006	46
Pete 321	Formation Evaluation	SP 2007	132
Pete 400	Reservoir Description	SP 2007	32
Pete 401	Reservoir Simulation	FA 2007	45
Pete 321	Formation Evaluation	SP 2008	134
Pete 400	Reservoir Description	SP 2008	35
Pete 401	Reservoir Simulation	FA 2008	44
Pete 321	Formation Evaluation	SP 2009	174
Pete 400	Reservoir Description	SP 2009	37
Pete 401	Reservoir Simulation	FA 2009	84
Pete 321	Formation Evaluation	SP 2010	133

Pete 400/Geol 400	Reservoir Description	SP 2010	39
Pete 401	Reservoir Simulation	FA 2010	45
Pete 619	Naturally Fractured Reservoirs	FA 2010	13
Pete 321	Formation Evaluation	SP 2011	157
Pete 663	Formation Evaluation Reservoir Performance	SU 2011	31
Pete 608	Well Logging Methods	SP 2011	10
Pete 619	Naturally Fractured Reservoirs	FA 2011	25
Pete 401	Reservoir Simulation	FA 2011	38
Pete 400	Reservoir Description	SP 2012	36
Pete 663	Formation Evaluation Reservoir Performance	SU 2012	40
Pete 619	Naturally Fractured Reservoirs	FA 2012	11
Pete 400/Geol 400	Reservoir Description	SP 2013	42
Pete 663	Formation Evaluation Reservoir Performance	SU 2013	42
Pete 321	Formation Evaluation	FA 2013	24
Pete 619	Naturally Fractured Reservoirs	FA 2013	20
Pete 400/Geol 400	Reservoir Description	SP 2014	40
Pete 663	Formation Evaluation Reservoir Performance	SU 2014	37
Pete 401	Reservoir Simulation	FA 2014	41
Pete 401	Reservoir Simulation	SP 2015	42
Pete 663	Formation Evaluation Reservoir Performance	SU 2014	41
Pete 321	Formation Evaluation	FA 2015	54
Pete 401	Reservoir Simulation	SP 2016	27
Pete 321-501	Formation Evaluation	FA 2016	37
Pete 321-502	Formation Evaluation	FA 2016	23
Pete 402	Integrated Asset Development	FA 2016	15
Pete 401	Reservoir Simulation	SP 2017	37
Pete 663-300	Formation Evaluation/Reservoir Performance	SU 2017	2
Pete 663-700	Formation Evaluation/Reservoir Performance	SU 2017	24
Pete 402	Integrated Asset Development	FA 2017	41
Pete 401	Reservoir Simulation	SP 2018	30
Pete 663-300	Formation Evaluation/Reservoir Performance	SU 2018	9
Pete 663-700	Formation Evaluation/Reservoir Performance	SU 2018	13
Pete 402	Integrated Asset Development	FA 2018	15
Pete 321-502	Formation Evaluation	SP 2019	45
Pete 663-700	Formation Evaluation/Reservoir Performance	SU 2019	16
Pete 402	Integrated Asset Development	FA 2019	18
Pete 321-502	Formation Evaluation	SP 2020	57
Pete 663-700	Formation Evaluation/Reservoir Performance	SU 2020	17
Pete 402	Integrated Asset Development	FA 2020	20
Pete 321-502	Formation Evaluation	SP 2021	59
Pete 663-700	Formation Evaluation/Reservoir Performance	SU 2021	9

Pete 402	Integrated Asset Development	FA 2021	24
Pete 321-502	Formation Evaluation	SP 2022	59

Courses Taught at Stanford and New Mexico Tech

Course	Subject	University	Semester	Year	Enrollment
Pete 251	Thermodynamics of Phase Equilibria	Stanford*	Autumn	1990	18
Pete 280C	Interfacial and Capillary Phenomena	Stanford	Spring	1991	12
Pete 251	Thermodynamics of Phase Equilibria	Stanford	Autumn	1991	16
Pete 280C	Interfacial and Capillary Phenomena	Stanford	Spring	1992	13
Pete 251	Thermodynamics of Phase Equilibria	Stanford	Autumn	1992	17
Pete 280C	Interfacial and Capillary Phenomena	Stanford	Spring	1993	11
Pete 122	Reservoir Fluids Lab	Stanford	Winter	1993	8
Pete 123	Core Analysis Lab	Stanford	Spring	1993	8
Pete 334	Naturally Fractured Reservoir Engineering and EOR	NMIMT	Spring	1994	15
Pete 334	Naturally Fractured Reservoir Engineering and EOR	NMIMT	Spring	1995	22
Che 454	Chemical Reaction Kinetics	NMIMT	Fall	1996	9
Che 411	Thermodynamics	NMIMT	Spring	1997	8
Che 454	Chemical Reaction Kinetics	NMIMT	Fall	1997	11
Che 411	Thermodynamics	NMIMT	Spring	1998	12
Che 454	Chemical Reaction Kinetics	NMIMT	Fall	1998	11
Che 454	Chemical Reaction Kinetics	NMIMT	Spring	1999	14
Che 411	Thermodynamics	NMIMT	Fall	1999	12
Che 454	Chemical Reaction Kinetics	NMIMT	Spring	2000	10

* Stanford University is on the Quarter System.

Short Courses and Continuing Education

Title of Course	Date	Location and Company

1. Reservoir Engineering of Naturally Fractured Reservoirs	July 2023	Villahermosa, MX, Pemex/HAL
2. Fundamentals of Reservoir and Production Engineering	May 2023	Kavala, Greece, International Hellenic University
3. Fundamentals of Well Test Analysis	October 2022	Quito, Ecuador, NExT
4. Fundamentals of Well Test Analysis	September 2022	Quito, Ecuador, NExT
5. Reservoir Characterization, CO_2 Enhanced Oil Recovery and Reservoir Engineering in Naturally Fractured Reservoirs	May 2022	Villahermosa, MX, Pemex/HAL
6. Fundamentals of Reservoir and Production Engineering	May 2022	Kavala, Greece, International Hellenic University
7. Fundamentals of Reservoir and Production Engineering	May 2021	Kavala, Greece, International Hellenic University
8. Fundamentals of Reservoir and Production Engineering	May 2020	Kavala, Greece, International Hellenic University
9. Fundamentals of Reservoir and Production Engineering	May 2019	Kavala, Greece, International Hellenic University
10. Applied Reservoir Management	December 2019	Quito, Ecuador, Repsol
11. Waterflooding Fundamentals and Applications	November, 2019	Quito, Ecuador, Petro Amazonas
12. Fundamentals of Reservoir Engineering	Feb 2018	Kavala, Greece, Kavala Technical Institute
13. EOR Possibilities with Complex Nano-Fluids in Unconventional Reservoirs	March 2017	Houston, TX, Flotek Industries
14. Fundamentals of Reservoir Engineering	May 2017	Kavala, Greece, Kavala Technical Institute
15. Fundamentals of Reservoir and Production Engineering	May 2016	Kavala, Greece, Kavala Technical Institute
16. Reservoir Characterization, CO_2 Enhanced Oil Recovery and Reservoir Engineering in Naturally Fractured Reservoirs	March 2016	Dehradun, India, NExT
17. Reservoir Characterization, CO_2 Enhanced Oil Recovery and Reservoir Engineering in Naturally Fractured Reservoirs	August, 2015	College Station, Gazprometft
18. Reservoir Characterization, CO_2 Enhanced Oil Recovery and Reservoir Engineering in Naturally Fractured Reservoirs	June, 2015	Spring, TX, ExxonMobil
19. Reservoir Characterization, CO_2 Enhanced	March 2015	Villahermosa, Mexico NExT

Oil Recovery and Reservoir Engineering in Naturally Fractured Reservoirs		
20. Fundamentals of Reservoir and Production Engineering	February 2015	Kavala Technical Institute, Greece Kavala Oil and Gas Co.
21. Reservoir Characterization, CO_2 Enhanced Oil Recovery and Reservoir Engineering in Naturally Fractured Reservoirs	January 2015	Rio de Janeiro, Brazil NExT
22. Reservoir Characterization, CO_2 Enhanced Oil Recovery and Reservoir Engineering in Naturally Fractured Reservoirs	October 2014	Danaspour, Bali NExT
23. Fundamentals of Reservoir and Production Engineering	May 2014	Kavala Technical Institute, Greece Kavala Oil and Gas Co.
24. Reservoir Characterization, CO_2 Enhanced Oil Recovery and Reservoir Engineering in Naturally Fractured Reservoirs	April 2014	Beijing, China NExT
25. Simulation of CO_2 Injection in Naturally Fractured Reservoirs	August 2014	Santa Cruz, Bolivia NExT
26. Reservoir Characterization, CO_2 Enhanced Oil Recovery and Reservoir Engineering in Naturally Fractured Reservoirs	July 2014	Santa Cruz, Bolivia NExT
27. Reservoir Characterization, CO_2 Enhanced Oil Recovery and Reservoir Engineering in Naturally Fractured Reservoirs	June 2014	Acapulco, Mexico NExT
28. Reservoir Characterization, CO_2 Enhanced Oil Recovery and Reservoir Engineering in Naturally Fractured Reservoirs	March 2014	Dehradun, India, NExT
29. Simulation of CO_2 Injection in Naturally Fractured Reservoirs	August 2013	Cd. Del Carmen, México NExT
30. Simulation of CO_2 Injection in Naturally Fractured Reservoirs	April 2013	Villahermosa, Mexico NExT
31. Fundamentals of Reservoir and Production Engineering	February 2013	Kavala Technical Institute, Greece Kavala Oil and Gas Co.
32. Determination of Water Influx from Production Data Analysis	November 2012	Villahermosa, Mexico NExT
33. Fundamentals of Reservoir Diagnostics Using OFM	October 2012	Bucharest, Romania NExT
34. Fundamentals of Reservoir Engineering for Completions Engineers	September 2012	Houston, TX NExT
35. Reservoir Characterization, CO_2 Enhanced Oil Recovery and Reservoir Engineering in Naturally Fractured Reservoirs	July 2012	Caracas, Venezuela, PDVSA

36. Fundamentals of Reservoir and Production Engineering	February 2012	Kavala Technical Institute, Greece Kavala Oil and Gas Co.
37. Determination of Water Influx from Production Data Analysis	May 2012	Al Khobar, Saudi Arabia, ARAMCO
38. CO_2 Enhanced Oil Recovery – Theory and Principles	March 2012	Houston, TX NExT
39. Fundamentals of Reservoir Diagnostics Using OFM	January 2012	Al Khobar, Saudi Arabia, ARAMCO
40. Reservoir and Production Engineering	November 2011	Al Khobar, Saudi Arabia, ARAMCO
41. Reservoir and Production Engineering	May 2011	Al Khaji, Saudi Arabia, ARAMCO
42. Reservoir and Production Engineering for Geophysicists	March 2011	Villahermosa, Mexico NExT
43. Simulation of CO_2 Injection in Naturally Fractured Reservoirs	August 2010	Villahermosa, Mexico NExT
44. Simulation of CO_2 Injection in Naturally Fractured Reservoirs	August 2010	Villahermosa, Mexico NExT
45. CO_2 Injection for Enhanced Oil Recovery	September 2008	Seoul, Korea KNOC
46. MAXPRO	January 2008	Kellyville, OK NExT
47. MAXPRO	September 2007	Kellyville, OK NExT
48. MAXPRO	May 2007	Kellyville, OK NExT
49. MAXPRO	January 2007	Kellyville, OK NExT
50. MAXPRO	March 2006	Kellyville, OK NExT
51. Fundamentals of Reservoir Engineering	February 2006	Greenspoint, Smith International
52. MAXPRO	January 2006	Kellyville, OK NExT
53. MAXPRO	January 2006	Kellyville, OK NExT
54. MAXPRO	December 2005	Kellyville, OK NExT
55. PEPTEC	November 2005	Kellyville, OK NExT
56. MAXPRO	November 2005	Kellyville, OK NExT
57. MAXPRO	October 2005	Kellyville, OK NExT
58. PEPTEC	October 2005	Kellyville, OK NExT
59. MAXPRO	September 2005	Kellyville, OK NExT
60. PEPTEC	August 2005	Kellyville, OK NExT

61. PEPTEC	July 2005	Kellyville, OK NExT
62. PEPTEC	June 2005	Kellyville, OK NExT
63. MAXPRO	May 2005	Kellyville, OK NExT
64. PEPTEC	April 2005	Kellyville, OK NExT
65. MAXPRO	March 2005	Kellyville, OK NExT
66. PEPTEC	February 2005	Livingston, Scotland NExT
67. MAXPRO	January 2005	Kellyville, OK NExT
68. MAXPRO	January 2005	Kellyville, OK NExT
69. Reservoir Characterization, CO_2 Enhanced Oil Recovery and Reservoir Engineering in Naturally Fractured Reservoirs	November 2004	Bogota, Columbia NExT
70. Reservoir Characterization, CO_2 Enhanced Oil Recovery and Reservoir Engineering in Naturally Fractured Reservoirs	September 2004	Villahermosa, Mexico NExT
71. Waterflooding and Reservoir Description	June 2004	Houston, TX NExT
72. Waterflooding and Reservoir Description	October 2003	Nizhnevartovsk, Siberia, Lukoil
73. Reservoir Characterization, CO_2 Enhanced Oil Recovery and Reservoir Engineering in Naturally Fractured Reservoirs	June 2003	Al Khobar, Saudi Arabia, NExT
74. OTS-2	January 2003	Kellyville, OK NExT
75. OTS-2	November 2002	Kellyville, OK NExT
76. OTS-2	July 2002	Bottesford, England NExT
77. OTS-2	March 2002	Kellyville, OK NExT
78. OTS-2	February 2002	Kellyville, OK NExT
79. OTS-2	November 2001	Bottesford, England NExT
80. Reservoir Characterization, CO_2 Enhanced Oil Recovery and Reservoir Engineering in Naturally Fractured Reservoirs - Part I	October 2001	Mexico City, UNAM
81. OTS-2	August 2001	Kellyville, OK NExT
82. OTS-2	July 2001	Bottesford, England NExT
83. OTS-2	May 2001	Kellyville, OK NExT
84. OTS-2	April 2001	Bottesford, England NExT
85. Reservoir Characterization, Enhanced Oil Recovery and Reservoir Engineering in Naturally Fractured Reservoirs – Part II	March 2001	Mexico City, UNAM
86. Reservoir Characterization, Enhanced Oil	February	Mexico City, UNAM

Recovery and Reservoir Engineering in Naturally Fractured Reservoirs – Part I	2001	
87. OTS-2	January 2001	Kellyville, OK NExT
88. OFS-1	November 2000	Kellyville, OK NExT
89. OTS-2	November 2000	Bottesford, England NExT
90. Characterization, Evaluation and CO_2 Enhanced Oil Recovery in Naturally Fractured Reservoirs	November 1998	PDVSA

- *OTS-2 is Schlumberger's "Oilfield Training Service" internal course for engineers with 3 – 5 years of experience. Topics include: 1) Petroleum Geology 2) Reservoir Engineering 3) Well-Test Analysis 4) Nodal Analysis 5) Open-hole Log Interpretation 6) Analysis of Reserves. This is a fully integrated course that covers all aspects of field development and utilizes three commercial software packages.
- ** MAXPRO/PEPTEC are reservoir interpretation classes for Schlumberger wireline engineers similar to the format of the OTS-2 described above

Consulting Experience in Reservoir Projects for CO_2 and Surfactant Enhanced Oil Recovery and WAG Projects

- Completion fluid design in Eagle Ford shale (Eagle Ford)
- Enhanced Oil Recovery in the Bakken shale (Bakken)
- Surfactant design for Wolfcamp B (Permian Basin)
- Layered reservoir in northern Oklahoma (North Burbank Unit)
- Water management handling in Kuwait/Saudi Arabia for KJO
- Analysis of CO_2 reserves and plans for injection for PEMEX (Chicontopec)
- Analysis and design of EOR project for PEMEX (Sitio Grande)
- Large oil play in outback region of Australia (Santos)
- Naturally fractured carbonate reservoir for CO_2 injection (Canada)
- Naturally fractured sandstone for waterflooding (Antelope Creek Formation, Utah, USA)
- Naturally fractured Spraberry Trend Area for CO_2 injection (Permian Basin, West Texas, USA)
- Carbonate reef for gravity stable CO_2 injection (Wellman Unit, West Texas, USA)
- Naturally fractured carbonate reservoir for CO_2 injection (Blinebry Formation, New Mexico, USA)

Consulting Engineering Advisor for CO_2 Enhanced Oil Recovery Projects, Water Injection and Management and Reserves Determination for Water Drive Reservoirs for Mexican National Oil Company 1996 – 1999 (PEMEX)

Reservoirs Investigated:

- Bermudez Complex, naturally fractured Cretaceous carbonate producing over 100,000 BOPD.
- Paredon, Jujo-Teco, Cardenas, Jacinto, naturally fractured Cretaceous carbonates
- Carmito, Arce, Agave, Topen, Mecate and Artesa, naturally fractured, gas-condensate Cretaceous carbonates
- Sitio-Grande, naturally fractured Cretaceous carbonate for CO_2 injection
- Cuichapa, Cinco Presidentes, Bacal, Lacamango, tertiary sandstone reservoirs, CO_2 candidates
- Cerro Nanchital naturally fractured carbonate
- Ek-Balam, off-shore aeolian sandstone
- Cantarell off-shore N_2 injection project
- Two day off-shore heavy oil workshop by invitation only (December 2013)

Technical advisor and trainer responsible for reservoir characterization and reservoir performance analysis including assimilation and integration of petrophysical, core, log and seismic data into geological modeling software for the ultimate purpose of developing reliable input for reservoir simulation for Enhanced Oil Recovery. Involved from 1996 - 1999 with PEMEX to assess development projects such as water and gas injection. I continue to work with PEMEX and have evaluated over 30 reservoirs in Mexico.

CO_2 sequestration with Santos, Australia July, 2007

Worked on initial plans for a large CO_2 sequestration project in depleted Australian oil reservoirs. The cost of the project is projected to be $700,000,000 USD. Spent two weeks working on intensive reservoir and production engineering plans to move CO_2 from a large field in the Copper Basin producing and venting a high percentage of CO_2 to fields amenable to CO_2 injection throughout the country.

Service and Outreach

- Member - Undergraduate Curriculum Committee 2012-2022
- Member – College of Engineering, Diversity Committee 2016 - 2022
- Director – Chevron Imaging Laboratory, Department of Petroleum Engineering 2002-2022
- Academic Advisor – Saudi Students Association 2009 - 2022
- Pioneer Natural Resources Faculty Mentor 2016-2018
- Invited as special guest to address Squad 5, 3rd Wing in the Corps of Cadets Spring 2017
- Member – New building committee for Petroleum Engineering 2017
- Member of ABET Ad Hoc Committee 2016
- Technical Reviewer for Journal of Physical Chemistry and SPE Journal, 2016
- Organized and supervised SPE student section Spring BBQ for Scotty's House charity 2006-2015
- Organized "Senior Day" at end of Spring semester where industry members come in to assess the capstone design course teamwork 2012-2015

- ABET Coordinator 2012-2014
- Department of Petroleum Engineering Awards Committee 2010 – 2014
- Associate Director of Crisman Institute 2014
- College of Engineering Faculty Advisory Committee 2008-2012
- Chairman Joint SPE-AAPG Applied Technology Workshop on Naturally Fractured Reservoirs, October 4 -6, 2010, Vail, CO.
- College of Engineering Appeals Committee – 2006-2010
- Chair of SPE Applied Technology Workshop on Naturally Fractured Reservoirs, January 26-27, 2006, Houston, TX
- Steering Committee for SPE Forum Series on Naturally Fractured Reservoirs, Broomfield, CO, June 18-23, 2006.
- SPE Primer Book Series, Committee Member and Author, 2003 – 2006.
- Society of Petroleum Engineers, Review Chairman, SPE Reservoir Engineering 2001 – 2005.
- Society of Petroleum Engineering Student Chapter, Faculty Advisor, 2003 – 2004.
- Society of Petroleum Engineers, Chair for SPE Reservoir Text Book Primer Series 2003.
- Society of Petroleum Engineers, Technical Editor, SPE Reservoir Engineering 1996 – 2001.
- SPE Abstract Committee: Emerging and Peripheral Technology, 1996 - 2000.

Awards

- 2017 – Karen E. Olson ’87 and Louis H. Turner Faculty Award for Excellence in Research
- 2014 – Distinguished Member Society of Petroleum Engineering (awarded to less than 1% of members)
- 2013 – Top Instructor Award, Reservoir Engineering, NExT
- 2012 – Top Instructor Award, Reservoir Engineering, NExT
- 2011 – Top Instructor Award, Reservoir Engineering, NExT
- 2005 - Halliburton Faculty Fellow