

LUIS E. ZERPA

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OBJECTIVE

Pursue a rewarding academic career as a tenured faculty member of a prestigious university. Provide a challenging, yet gratifying educational experience to undergraduate and graduate students and lead novel research projects for the advancement of knowledge applicable to solution of key problems in petroleum engineering.

EXPERIENCE

- **Assistant Professor (Tenure-track)**. Since April 2013. Colorado School of Mines, Petroleum Engineering Department.
- **Research Assistant**. 2009 – 2012. Colorado School of Mines, Center for Hydrate Research. Developed a comprehensive model for predicting gas hydrate formation, dissociation and transportability in oil and gas flowlines.
- **Assistant Professor**. 2002 – 2009. University of Zulia, Applied Computing Institute, Engineering School, Graduate Division.
 - *Teaching experience*: Graduate level courses: Numerical Analysis; Surrogate models and Optimal Design of Complex Systems; Optimization for Engineers; and Data Mining for Oil Industry. Short industry courses: Exploration and Production Fundamentals; Integrated Optimization of Oil Production Systems; and Reservoir Simulation and Applications.
 - *Research programs*: “Evaluation of oil wells behavior using emerging computational technologies” (FONACIT G-97003899) funded by the FONACIT (Venezuela’s premier research agency similar to NSF).
 - *Consulting experience*: Design of an industrial off-shore chemical flooding pilot project, PDVSA, La Salina Field, LL-03 Miocene reservoir, Venezuela. 2006-2008.
- **Research Assistant**. 2000 – 2001. University of Zulia, Applied Computing Institute, Engineering School, Venezuela. Developed a model for the integrated optimization of oil production systems.

EDUCATION

- Ph.D. Petroleum Engineering, Colorado School of Mines. Golden, CO. 2013.
- M.Sc. Mechanical Engineering, University of Zulia, Venezuela. 2004.
- B.Sc. Mechanical Engineering, University of Zulia, Venezuela. 2001.

COMPLEMENTARY EDUCATION

- One year intensive Specialization Program on Surface Chemistry applied to complex systems such as emulsions and foams, from the University of Los Andes, Merida, Venezuela. Graduate program sponsored by the Venezuelan Ministry of Science and Technology. 2005-2006.

RESEARCH INTEREST

- Optimal design of complex systems in engineering
- Reservoir simulation and characterization
- Enhanced oil recovery methods
- Surface chemistry and formulation of surfactant / oil / water systems
- Flow assurance
- Gas hydrates in nature as potential energy source

RECOGNITIONS AND AWARDS

- Roberto Rocca Fellowship. 2010-2012.
- Viola Vestal Coulter Foundation Graduate Fellowship. 2009.
- Most cited Journal of Petroleum Science and Engineering articles published since 2007. Carrero, Queipo, Pintos, and Zerpa. "Global Sensitivity Analysis of Alkali-Surfactant-Polymer Enhanced Oil Recovery Processes," J. Pet. Sci. Eng. 58(1-2): 30-42 (2007).
- Research Award Francisco Eugenio Bustamante. University of Zulia. 2006.
- Research Fellowship in Fluid Transport and Heat Transfer. University of Zulia. 2002-2004.
- Academic Excellence Award, Mechanical Engineering Dept. University of Zulia. 1999.

PROFESSIONAL AFFILIATIONS

- Colegio de Ingenieros de Venezuela.
- ACS (American Chemical Society). Member N° 30138951.
- ASME (The American Society of Mechanical Engineers). Member N° 6961387.
- SPE (Society of Petroleum Engineers). Member N° 3104765.

PEER-REVIEWED JOURNAL PAPERS

L.E. Zerpa, I. Rao, Z.M. Aman, T.J. Danielson, C.A. Koh, E.D. Sloan, A.K. Sum. "Multiphase flow modeling of gas hydrates with a simple hydrodynamic slug flow model," Chemical Engineering Science, in press (2013). [doi: 10.1016/j.ces.2013.06.016]

S.V. Joshi, G.A. Grasso, P.G. Lafond, I. Rao, E. Webb, L.E. Zerpa, E.D. Sloan, C.A. Koh, A.K. Sum. "Experimental flowloop investigations of gas hydrate formation in high water cut systems," Chemical Engineering Science, 97:198-209 (2013). [doi: 10.1016/j.ces.2013.04.019]

L.E. Zerpa, E.D. Sloan, A.K. Sum, C.A. Koh. "Overview of CSMHyK: A transient hydrate formation model," Journal of Petroleum Science and Engineering, 98-99: 122-129 (2012). [doi: 10.1016/j.petrol.2012.08.017]

L.E. Zerpa, E.D. Sloan, C.A. Koh, A.K. Sum. "Hydrate Risk Assessment and Restart Procedure Optimization of an Offshore Well Using a Transient Hydrate Prediction Model," SPE Oil and Gas Facilities, 1(5):49-56 (2012). [doi: 10.2118/160578-PA]

Luis E. Zerpa, Jean-Louis Salager, Carolyn A. Koh, E. Dendy Sloan, Amadeu K. Sum. "Surface Chemistry and Gas Hydrates in Flow Assurance," Industrial Engineering Chemistry Research, 50(1): 188-197 (2011). [doi: 10.1021/ie100873k]

Enrique Carrero, Nestor V. Queipo, Salvador Pintos, Luis E. Zerpa. "Global Sensitivity Analysis of Alkali-Surfactant-Polymer Enhanced Oil Recovery Processes," Journal of Petroleum Science and Engineering, 58(1-2): 30-42 (2007). [doi: 10.1016/j.petrol.2006.11.007]

- Luis E. Zerpa, Nestor V. Queipo, Salvador Pintos, Jean-Louis Salager. "An Optimization Methodology of Alkaline-Surfactant-Polymer Flooding Processes Using Field Scale Numerical Simulation and Multiple Surrogates," *Journal of Petroleum Science and Engineering* 47(3-4):197-208 (2005). [doi: 10.1016/j.petrol.2005.03.002]
- N. V. Queipo, L. E. Zerpa, J. Goicochea, A. J. Verde, S. Pintos, A. Zambrano. "A Model for the Integrated Optimization of Oil Production Systems," *Journal of Engineering with Computers*. 19(2): 130-141 (2003). [doi: 10.1007/s00366-003-0255-1]

CONFERENCE PAPERS

- I. Rao, L.E. Zerpa, E.D. Sloan, C.A. Koh, A.K. Sum. "Multiphase flow modeling of gas-water-hydrate systems," Offshore Technology Conference, 6 – 9 May 2013, Houston, Texas, USA.
- Z.M. Aman, L.E. Zerpa, G. Grasso, K. Springer, E.D. Sloan, A.K. Sum, C.A. Koh. "Modeling hydrate formation and aggregation in oil-dominated systems," 2012 AIChE Annual Meeting, 28 October – 2 November 2012, Pittsburgh, Pennsylvania, USA.
- L.E. Zerpa, I. Rao, Z.M. Aman, E.D. Sloan, C.A. Koh, A.K. Sum. "Extension of a Simple Hydrodynamic Slug Flow Model for Transient Hydrate Kinetics," 8th North American Conference on Multiphase Technology, 20 – 22 June, 2012, Banff, Canada.
- L.E. Zerpa, Z.M. Aman, S. Joshi, I. Rao, E.D. Sloan, C.A. Koh, A.K. Sum. "Predicting Hydrate Blockages in Oil, Gas and Water-Dominated Systems," Offshore Technology Conference, 30 April–3 May 2012, Houston, Texas, USA.
- L.E. Zerpa, E.D. Sloan, C.A. Koh, A.K. Sum. Hydrate Risk Assessment and Restart Procedure Optimization of an Offshore Well Using a Transient Hydrate Prediction Model," OTC Brasil, 4-6 October 2011, Rio de Janeiro, Brazil.
- S. Joshi, I. Rao, L.E. Zerpa, E. Webb, P. Lafond, E.D. Sloan, A.K. Sum, C.A. Koh. "Understanding hydrate plug formation from high water cut systems with a four inch flowloop," 7th International Conference on Gas Hydrates, 17-21 July 2011, Edinburgh, Scotland, United Kingdom.
- L.E. Zerpa, E.D. Sloan, A.K. Sum, C.A. Koh. "CSMHYK transient hydrate kinetics model: a tool for generation of best practices in flow assurance," 7th International Conference on Gas Hydrates, 17-21 July 2011, Edinburgh, Scotland, United Kingdom.
- L.E. Zerpa, E.D. Sloan, A.K. Sum, C.A. Koh. "Overview of CSMHYK: a transient hydrate formation model developed over a decade of hydrate research," 7th International Conference on Gas Hydrates, 17-21 July 2011, Edinburgh, Scotland, United Kingdom.
- L.E. Zerpa, E.D. Sloan, A.K. Sum, C.A. Koh. "Generation of Best Practices in Flow Assurance Using a Transient Hydrate Kinetics Model," Offshore Technology Conference, 2-5 May 2011, Houston, TX, USA.
- L.E. Zerpa, N.V. Queipo, S. Pintos, E. Tillero, D. Alter. "An Efficient Response Surface Approach for the Optimization of ASP Flooding Processes: ASP Pilot Project LL-03 Reservoir," 2007 SPE Latin American and Caribbean Petroleum Engineering Conference, 15-18 April 2007. Buenos Aires, Argentina.
- L.E. Zerpa, N.V. Queipo, S. Pintos, J.L. Salager. "An Optimization Methodology of Alkaline-Surfactant-Polymer Flooding Processes Using Field Scale Numerical Simulation and Multiple Surrogates," 2004 SPE/DOE Fourteenth Symposium on Improved Oil Recovery. 17-21 April 2004. Tulsa, Oklahoma, U.S.A.

SUPERVISED UNDERGRADUATE RESEARCH

- Romina Fundaro. Optimization of a viscoelastic based fluid for hydraulic fracturing of reservoirs in the Maracaibo Lake basin. Petroleum Engineering, U. of Zulia, 2007.
- Maria Angélica García. State of the art review of optimum design of alkali-surfactant-polymer injection processes. Petroleum Engineering, U. of Zulia, 2007.
- Andrea Montero. Uncertainty reduction quantification of alkali-surfactant-polymer injection processes. Petroleum Engineering, U. of Zulia, 2005.
- Emma Celimar Pineda. Uncertainty quantification of enhanced oil recovery processes by polymer flooding. Petroleum Engineering, U. of Zulia, 2005.
- Néstor Jesús Campos. Real time optimization model for an integrated oil production system. Petroleum Engineering, U. of Zulia, 2005.
- Karinella Mieres. Uncertainty quantification of oil reservoirs production estimates. Petroleum Engineering, U. of Zulia, 2003.

SUPERVISED GRADUATE RESEARCH

- Gabriela Cuba. Global Sensitivity Analysis Applied to Surfactant-enhanced Aquifer Remediation. M.Sc. Environmental Engineering, U. of Zulia, 2010.
- Luis Pineda. Optimal control strategy to maximize net present value in oil production processes. M.Sc. Applied Computing, U. of Zulia, 2009.

PROFESSIONAL SERVICE

- Reviewer of articles for Chemical Engineering Science, Int. J. of Oil, Gas and Coil Tech, Ind. Eng. Chem. Res., and Nat. Gas Sci. Eng.. 2013.
- Reviewer of article for SPE Journal. 2012.
- Reviewer of article for Fuel, and Ind. Eng. Chem. Res. an ACS Journal. 2011.