**CEAS CURRICULUM VITAE**

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**DATE:** October 30, 2017

**NAME:** Vladimir Alvarado

**CURRENT UW POSITION:** Department Head, Professor, Department of Chemical Engineering, Adjunct Professor in the Department of Petroleum Engineering, Geology and Geophysics, and in the School of Energy Resources (SER); Associated Faculty at the Enhanced Oil Recovery Institute (EORI).

**UW ADDRESS**

EN4055a

Department of Chemical Engineering

College of Engineering and Applied Science

University of Wyoming, Laramie, WY 82071

Ph.: 307-766-6464

Email: [valvarad@uwyo.edu](mailto:valvarad@uwyo.edu)

http://wwweng.uwyo.edu/chemical/research/alvarado/

**LICENSURE**

None

**EDUCATION**

Degree Year University

PhD 1996 University of Minnesota

Dissertation: “Reaction and Dispersion in Porous Media”

Supervisors: Professors (late) H. Ted Davis and (late) L.E. Scriven

MS 2002 Institut Français du Pétrole School (IFP)

Thesis: “Analytical Simulation for Evaluation of EOR Opportunities in Venezuela: Integrated Field Laboratories (IFL) Projects and Opportunity Maps”

BS 1987 Universidad Central de Venezuela (UCV)

**EMPLOYMENT**

Position Organization Dates

Professor University of Wyoming 2017-present

CHE Department Head University of Wyoming 2016-present

Associate Department Head University of Wyoming 2013-2015

Associate Professor University of Wyoming 2012-2017

Assistant Professor University of Wyoming 2006-2012

Senior Reservoir Engineer Norwest-Questa Corp. 2005-2009

Associate Director SDM Consultancy and Services 2003-2005

Visiting Professor PUC-Rio (ANP), Brazil 2003-2005

Project Head PDVSA-Intevep, Venezuela 1999-2003

Research Associate Intevep S.A., Venezuela 1988-1998

Visiting Researcher IVIC, Venezuela (pro bono) 1998-2003

Associate (adjunct) Professor USB, Venezuela 1998-2003

Instructor and TA University of Minnesota 1992-1996

Teaching Assistant UCV, Venezuela 1984-1987

**HONORS AND AWARDS**

2016 SPE A Peer Apart

2016 SPE Outstanding Technical Editor Award (SPE Journal) 2016

2015 SPE Outstanding Technical Editor Award (SPE Journal) 2015

2015 ExxonMobil Hispanic Heritage Award for STEM 2015

2014 2nd prize of "Energies Best Paper Award 2014"

2012 SPE Outstanding Technical Editor Award (SPE Journal) 2012

2012 Journal of Petroleum Science and Engineering Outstanding Reviewer of 2011

2011 Anadarko Fellowship for Excellence in Energy Scholarship

2009 Don Stinson Outstanding Teaching Award, Dept. of Chemical and Petroleum Eng., University of Wyoming

1995 Outstanding TA, Department of Chemical Engineering and Materials Science, University of Minnesota

1991 Scholarship to pursue a Ph. D. in the U.S.A. awarded by Intevep, S.A.

1987 Strategic Reserve, Intevep S.A.

**CURRENT UW JOB DESCRIPTION**

\_25.0\_% Teaching \_10.0\_% Research \_5\_% Service \_50\_% Admin\_10\_% Advising\_\_\_% Other (describe)

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**1. TEACHING**

**1.1 Courses Taught**

Year Semester Course No./Title Cr. Hrs. Enrollment Comments

2017 Fall CHE 5150-01 3 2 One Section

Topics on Rheology

2017 Spring CHE 4050 3 17 One Section

Unit Operation Labs II

2017 Spring CHE 5150-02 3 2 One Section

Interfacial Science

2016 Fall CHE 3040 3 19 One Section

Unit Operation Labs I

2016 Fall CHE 5150 3 1 One Section

Advanced Interfacial Phenomena

2016 Spring PETE 4310/5310 3 30 One Section

Fundamentals of EOR

2016 Spring CHEN 5150-02 2 01 One Section

Fundamentals of Interfacial Science

2015 Fall PETE 2050 3 60 One Section

Introduction to PETE

2015 Spring PETE 4300/5300 3 30 One Section

PETE Senior Design I

2015 Spring PETE 4735 3 24 One Section

PETE Senior Design II Mentor 6 teams

Official instructor

2014 Fall PETE 4720 3 24 One Section

PETE Senior Design I Mentor 6 teams

2014 Fall PETE 4735 3 4 One Section

PETE Senior Design II

2014 Fall PETE 2050 3 102 One Section

Introduction to PETE

2014 Spring PETE 4300/5300 3 17 One Section

Reservoir Simulation

2013 Fall PETE 4310/5310 3 43 One Section

Fundamentals of EOR

2012 Spring PETE 4060/5060 3 15 One Section

Fluid Flow thru Porous Media

2012 Spring PETE3715 /Production Engineering 3 36 One Section

2011 Fall PETE/CHE/5890-01 1 30 One Section

CHE/PETE Engineering Seminar Coordinator

2011 Fall PETE 4300/5300 3 11 One Section

Reservoir Simulation

2011 Spring PETE 2060 3 30 One Section

Intro. to Petroleum Eng. Computing

2011 Spring PETE 4060/5060 3 06 One Section

Fluid Flow thru Porous Media

2011 Spring PETE 5150-03 3 01 One Section

Problems in Interfacial Engineering

2011 Spring PETE/CHE/5890-01 1 30 One Section

CHE/PETE Engineering Seminar Coordinator

2010 Fall PETE 4300/5300 3 31 One Section

Reservoir Simulation

2010 Fall PETE 5200-01 3 01 One Section

Independent Study: IF. Eng.

2010 Fall PETE 4990-02 3 01 One Section

Pendant Drop – Interfacial Ten. Anal.

2010 Fall PETE/CHE/5890-01 1 30 One Section

CHE/PETE Engineering Seminar Coordinator

2010 Spring PETE/CHE/4060/5060/Flow thru 3 16 One Section

Porous Media

2009 Spring PETE/CHE/4060/5060/Flow thru 3 12 One Section

Porous Media

2008 Fall CHE5150/PETE5100-1 3 11 One Section

Mathematical Methods

2008 Spring PETE/CHE/4060/5060/Flow Thru 3 05 One Section

Porous Media

2007 Fall CHE5150/PETE5100-1 3 10 One Section

Mathematical Methods

2007 Spring PETE3715 /Production Engineering 3 19 One Section

2006 Fall PETE/CHE/4060/5060/

Flow Thru Porous Media 3 12 One Section

**1.2 Sabbaticals**

2012-2013 – Catholic University of Rio de Janeiro (PUC-Rio), Brazil

**2. SERVICE**

**2.1 Professional Service**

2017 2018 SPE Improved Oil Recovery Symposium **Technical Selection Committee**, Tulsa, OK

2017 Guest Associate Editor of Interpretation

2016 SPE “A Peer Apart” (for reviewing 100+ articles for SPE Journals)

2016 Guest Editor of Energies. Special Issue on Petroleum Engineering.

2016-present Associated Editor of **SPE Journal**.

2016 Chemical EOR Technical Session **Chair**, 2016 SPE Improved Oil Recovery Symposium, Tulsa, OK

2016 Low Salinity Technical Session **Chair**, 2016 SPE Improved Oil Recovery Symposium, Tulsa, OK

2015-present Reviewer of Qatar National Research Fund (**QNRF**) proposals.

2015-present Reviewer of Natural Sciences and Engineering Research Council of Canada (**NSERC**) proposals, including site visits.

2015 2016 SPE Improved Oil Recovery Symposium **Technical Selection Committee**, Tulsa, OK

2015 Aleksey Baldygin PhD Dissertation Committee External Reviewer, University of Alberta

2014 **Chairman** of Praxis Interactive Technology Workshop Improved Enhanced Oil Recovery 11th Global Edition, Bogota, Colombia, 25-27 August.

2014 2014 SPE Improved Oil Recovery Symposium **Technical Selection Committee**, Tulsa, OK

2014 Chemical EOR Technical Session **Chair**, 2014 SPE Improved Oil Recovery Symposium, Tulsa, OK

2014 Low Salinity Technical Session **Co-Chair**, 2014 SPE Improved Oil Recovery Symposium, Tulsa, OK

2013-present **Editorial Board** of American Journal of Oil and Chemical Technologies

2013-present **Editorial Board** of International Journal of Oil, Gas and Coal Technology

2013 **Session Chair**, Chemicals and Water Management, “IV International Seminar on Oilfield Water Management”, Rio de Janeiro, Brazil, 28-30 August, 2013.

2012 **Session Leader and Speaker**, “7th Global Improved Oil Recovery Praxis Interactive Technology Workshop”, Cancun, Mexico, September 25-28, 2012.

2012-present Reviewer of American Chemical Society Petroleum Research Fund (**ACS-PRF**) proposals.

2012-present Reviewer of Swiss National Science Foundation (**SNSF**) proposals.

2012 **Session Chair and Keynote Speaker**, “9th Biennial International Conference and Exposition: Hyderabad-2012”, Hyderabad, India, February 16-18, 2012.

2011 3rd WY IOR/EORI Conference committee, Sept. 12-13, 2011.

2010 **Session CM Chair**, 63rd Annual Division of Fluid Dynamics Meeting, in Long Beach, CA.

2008-2012 UW-SPE Student Chapter Faculty Advisor

**Reviewer Services**

2009-present Frequent reviewer of book proposals (Elsevier-Gulf Publishing)

2017-present Reviewer for Journal of Energy Storage

2017-present Reviewer for International Journal of Greenhouse Gas Control

2016-present Reviewer Arabian Journal of Science and Engineering

2016-present Reviewer for Journal of Molecular Liquids

2016-present Reviewer for Journal of CO2 Utilization

2016-present Reviewer for Revista Chilena de Ingeniería

2015-present Reviewer for Latin American Applied Research

2015-present Reviewer for Journal of Carbon Research

2015-present Reviewer for Environmental Earth Sciences

2014-present Reviewer for Molecules

2014-present Reviewer for Polymers (MDPI)

2014-present Reviewer for Separation Science and Technology

2013-present Reviewer for Polish Journal of Chemical Technology

2013-present Physical Review Letters

2012-present Physical Review E

2012-present Reviewer for International Journal of Multiphase Flow

2012-present Reviewer for Natural Resources Research

2012-present Reviewer for ICP Revista (Journal) CT&F

2012-present Reviewer for Center - Asia-Pacific Journal of Chemical Engineering

2012-present Reviewer for Chemical Engineering Journal

2012-present Reviewer for Computers and Fluids

2012-present Reviewer for the Brazilian Journal of Chemical Engineering

2012-present Reviewer for Fuel

2012-present Reviewer for Industrial & Engineering Chemistry Research

2011-present Reviewer for Energies

2011-present Reviewer for Energy Exploration and Exploitation

2011-present Reviewer for Scientific Research and Essays

2011-present Reviewer for Energy & Fuels

2011-present Reviewer for Environmental Science & Technology

2011-present Reviewer for Journal of Petroleum Science and Engineering

2010-present Reviewer for Langmuir

2010-present Reviewer for Chemical Engineering Communications

2010-present Reviewer for Colloids of Surface Sciences A: Physicochemical and Engineering Aspects

2010-2015 Technical Editor for Journal of Canadian Petroleum Technology (to be discontinued in 2016)

2010-present Technical Editor for SPE Journal

2009-present Reviewer for Journal of Physical Chemistry

2008-present Reviewer for Transport in Porous Media

2008-present Reviewer for AIChE Journal

2008-present Reviewer for Chemical Engineering Science

2008-present Technical Editor for SPE Reservoir Evaluation & Engineering: Formation Evaluation

2007-present Technical Editor for SPE Reservoir Evaluation & Engineering

2006-present Reviewer for Water Resources Research

1997-2002 Frequent Reviewer for Visión Tecnológica

**2.2 University Service**

1. Campus research (stockroom) supplies committee, 2017.
2. International Travel Award Committee, 2016 – present.
3. Summer Research Apprentice Program Lab Visit, July 2010
4. EORI Director Search Committee. Sept. 2009 – 2010.
5. SER Carbon Management Institute Director Search Committee. Dec. 2008 – 2009.
6. SER Academic Council. July 2009 – June 2011 (renewal).
7. SER Academic Council. Oct.2008 – June 2009.
8. College of Engineering Dean Search Committee. Spring 2007.
9. Voluntary lecture discussion (75 minutes) for Math 1305 class. Fall 2007.

**2.3 College Service**

1. Strategic Planning Committee. 2017 – present.
2. Academic Programs Committee (APC) PETE Representative. 2008 – 2012.
3. College of Engineering and Applied Science Technology Committee (CTC). Fall 2007 – 2015.
4. Schlumberger-Geoquest software donation. 2008 – present.
5. Halliburton-Landmark software donation. 2008 – present.
6. BP Fundraising campaign. Summer 2007.

**2.4 Department Service**

1. PETE Director of Graduate Program. 2015 – 2016
2. Department APL Search Committee Chair. 2015 – 2016.
3. Department Faculty Search Committee. 2015 – 2016.
4. Department Head Search Committee. 2014 – 2015.
5. Associate Department Head for Petroleum Engineering
6. Department Head Search Committee. 2013 – 2014.
7. BP Rock & Fluids Lab Committee Chair. 2011 – 2012.
8. Sr. Technician Search Committee, 2011.
9. Curriculum Committee, 2011.
10. ABET Preparation Committee, PETE Lead, 2007– 2011.
11. PETE Design project reviewer. Fall 2008, 2010, 2011.
12. CHE Assistant/Associate Professor Search Committee. 2008 – 2009.
13. PETE undergraduate degree check reviewer. Fall 2008 – 2010.
14. EnCana Reservoir Simulation Lab Committee Chair. 2008 – 2010.
15. BP Rock & Fluids Lab Committee. 2007 – present.
16. Recruiting activities with high school and transfer students. 2007 – present.
17. PETE undergraduate curriculum committee. 2007 – present.
18. PETE Assistant Professor Search Committee (twice). 2007, 2008.
19. SER PETE Chair Professor Search Committee. Fall 2007.
20. CHE/PETE Graduate Committee. Fall 2006 – 2011.
21. Course Request Action forms: Reservoir Simulation, Wellbore Operations, Rock & Fluids lab, etc.
22. Undergraduate recruitment campaign at SAIT and NAIT, Alberta, Canada. Spring 2007.
23. Undergraduate Advisor. 2006-present.

**3. STUDENT ADVISING/GRADUATE SUPERVISION**

**3.1 Undergraduate Students**

Academic Year Number of Students

16-17 30

15-16 30

14-15 70

12-13 30

11-12 25

10-11 30

09-10 17

08-09 21

07-08 11

06-07 8

**3.2 Undergraduate Students Research**

Name Major Year/Semester

A. Brown CHE 2017/Fall

J.C. Acosta M. PETE 2017/Fall

D. Lovick PETE 2016/Summer – 2017/Spring

Y. Akbas PETE 2016/Spring

C. Monroe PETE 2015/Spring

L. Salinas PETE 2014/Fall – 2015/Spring

L. Ye PETE 2014/Summer

J. French PETE 2012/Summer, 2013/Summer

A. Elgohary PETE 2012/Spring

D. Panta PETE 2012/Spring

T. Debebe PETE 2011/Fall-2012/Spring-Summer

D.R. Newman PETE 2011/Fall-2012/Spring-Summer

G. Grubac PETE 2011/Spring

P.L. Lemke PETE 2010/Fall

A. Alvarez PETE 2010/Summer-Fall

C. Kitchen PETE 2007/Summer-Fall

**3.3 Graduate Students Completed**

**3.3.1 Ph.D. Students**

Name Degree Year/Semester

G. Garcia-Olvera PhD 2016/Summer

P. Hoyer PhD 2016/Summer

X. (Xiao) Wang PhD 2015/Spring

S. Raziperchikolaee PhD 2014/Spring (co-advisee at UW)

M. Moradi PhD 2013/Fall

A. Padhi PhD 2013/Spring (co-advisee at UW)

M. Kazempour PhD 2012/Spring

S.H. Behzadi PhD 2012/Spring

V.R. Guillen PhD 2011/Summer (co-advisee at PUC-Rio)

X. (Xiuyu) Wang PhD 2010/Spring

M.I. Romero PhD 2009/Summer (co-advisee at PUC-Rio)

S. Cobos PhD 2007/Summer (co-advisee at PUC-Rio)

T. Peña PhD 2007/Summer (co-advisee at PUC-Rio)

**3.3.2 M.Sc. Students**

Name Degree Year/Semester

T. Reilly MSc (A) 2017/Summer

M. Mohamed MSc (A) 2017/Summer

L. Ye MSc (A) 2016/Summer

G. Li MSc (A) 2016/Summer

A. Khannikova MSc (A) 2015/Summer

Y. Yu MSc (A) 2015/Summer

M.K. Silva S. MSc (A) 2014/Summer (co-advisee at PUC-Rio)

L. Zhang MSc (A) 2014/Summer

Y. Chang MSc (A) 2014/Summer

B. Morin MSc (A) 2014/Summer (co-advisee at UW)

L. Fu MSc (A) 2014/Summer

K.M. Colmenares V. MSc (A) 2014/Spring (co-advisee at PUC-Rio)

J. Peñuela MSc (A) 2014/Spring (co-advisee at PUC-Rio)

M. Yu MSc (A) 2013/Fall

Y. Shi MSc (A) 2013/Summer (co-advisee at UW)

B. Soares Engelke MSc (A) 2012/Summer (co-advisee at PUC-Rio)

C. Gregersen MSc (A) 2012/Spring

L. Freeman MSc (B) 2011/Fall

E. Sundstrom MSc (A) 2011/Summer

S. Bhattacharya MSc (A) (Visiting student, June-July, 2011)

G.B.L. Nogueira MSc (A) 2011/Spring (co-advisee at PUC-Rio)

A. Brandvik MSc (A) 2010/Fall

A. Salazar MSc (A) 2009/Spring

S. El-Sayed MSc (B) 2009/Spring

V.R. Guillen MSc (A) 2008/Summer (co-advisee at PUC-Rio)

**3.4 Graduate Students Current**

**3.4.1 Ph.D. Students**

Name Degree

B. X. Medina PhD Fall 2017 (CHE)

Gustavo A. Maya T. PhD (co-advisee at UNC-Medellin, Colombia)

Ruben H. Castro G. PhD (co-advisee at UNC-Medellin, Colombia)

H. Wang PhD Fall 2013 (PETE)

*G.B.L. Nogueira* PhD (co-advisee at PUC-Rio, incomplete)

**3.4.2 M.Sc. Students**

Name Degree

Kelly Meyers MSc (A) Fall 2016 (CHE)

**4. POSTDOCTORAL STUDENTS/RESEARCH ASSOCIATES**

Name Date

X. (Xiao) Wang June 2015 – December 2016

X. (Xiuyu) Wang May 2010 – December 2011 (co-supervisor)

P. Gamage August –December 2009

**5. PUBLISHED & SUBMITTED WORKS**

**5.1 Books/Textbooks/Monographs/Chapters in Books**

1. V. Alvarado and E. Manrique, Elsevier Inc. (Gulf Professional Publishing), *expected publication in* ***2018***, “Enhanced Oil Recovery Handbook: Methods, Simulations and Modeling”, ISBN 9781482230864.
2. T.E. Lehmann and V. Alvarado, CRC Press, **2015**, peer-reviewed chapter “Nuclear Magnetic Resonance Upstream Applications: Crude Oil Characterization, Water-Oil Interface Behavior and Porous Media” in “Advances in Analytical Methods in Petroleum Upstream Applications”, pp. 139–158, ISBN: 978-1-4822-3086-4
3. V. Alvarado and E. Manrique, Elsevier Inc. (Gulf Professional Publishing), **2010***, “*Enhanced Oil Recovery: Field Planning and Development Strategies”, ISBN 978-1-85617-855-6. Also translated into Russian, ISBN 978-5-903363-14-8 and into Portuguese,
4. C. Alvarez, E. Manrique, V. Alvarado, A. Samán, L. Surguchev, T. Eilertsen, WAG pilot at VLE field and IOR opportunities for mature fields at Maracaibo Lake, Progress in Mining and Oilfield Chemistry, Vol. 3, István Lakatos (ed): Recent Advances in Enhanced Oil and Gas Recovery, Budapest **2001**.
   1. **Journal Articles**

\*Corresponding author

UW Graduate Students

* + 1. *Published and In Press*

1. H. Wang and V. Alvarado\*, (**2017**), “Diffusion coefficient in bulk brine and glass beads using the PFG-NMR method to characterize porous media”, accepted*,* Journal of Natural Gas Science and Engineering.
2. M. Moradi, G. Garcia-Olvera, B. Morin, J. Oakey and V. Alvarado\*, (**2017**), “Crude oil-water interfacial elasticity: an alternative enhanced-oil recovery mechanism in low-salinity waterflooding”,accepted, SPE Journal.
3. E. A. Taborda, C. A. Franco, M. A. Ruiz, V. Alvarado and F. B. Cortés\*, (**2017**), “Striking Behavior of the Rheology in Heavy Crude Oils by Adding Nanoparticles”, accepted, Adsorption Science and Technology. DOI: 10.1177/026361741772799
4. P. Hoyer and V. Alvarado\*, (**2017**), “Stability of liquid bridge with elastic interface”, Vol. 7, pp. 49344 - 49352, RSC Advances. DOI: 10.1039/c7ra09657g
5. L. J. Giraldo, M. A. Giraldo, S. Llanos, G. Maya, R. Zabala, C. A. Franco, V. Alvarado, F. B. Cortés\*, (**2017**), “The Effects of SiO2 Nanoparticles on the Thermal Stability and Rheological Behavior of Hydrolyzed Polyacrylamide based Polymeric Solutions”, Vol. 159, pp. 841-852, Journal of Petroleum Science and Engineering. DOI: 10.1016/j.petrol.2017.10.009
6. R.V. Ponce, M.S. Carvalho\* and V. Alvarado\*, (**2017**), “Water-alternating-macro emulsion reservoir simulation through capillary-number dependent modeling”, Vol. 39, pp. 4135–4145, Journal of the Brazilian Society of Mechanical Sciences and Engineering. DOI: 10.1007/s40430-017-0885-7
7. G. Garcia-Olvera and V. Alvarado\*, (**2017**), “Interfacial Rheological Insights of Sulfate-Enriched Smart-Water at Low- and High-Salinity in Carbonates”, Vol207, pp. 402-412, Fuel. DOI: 10.1016/j.fuel.2017.06.094
8. X. Wang and V. Alvarado\*, (**2017**), “Effects of Low-salinity waterflooding on capillary pressure hysteresis”, Vo. 207, pp. 336-343*,* Fuel. DOI: 10.1016/j.fuel.2017.06.095
9. D. Grana\*, S. Verma, J. Pafeng, X. Lang, H. Sharma, W. Wu, E. Campbell-Stone, K. Ng, V. Alvarado, S. Mallick, and J. Kaszuba, (**2017**), “A rock physics and seismic reservoir characterization study of the Rock Springs Uplift, a CO2 sequestration site in Southwestern Wyoming”, Vol. 63, pp. 296-309, International Journal of Greenhouse Gas Control. DOI: 10.1016/j.ijggc.2017.06.004
10. E. A. Taborda, V. Alvarado\* and F. B. Cortés\*, (**2017**), “Effect of SiO2-Based Nanofluids in the Reduction of Naphtha Consumption for Heavy and Extra-Heavy Oils Transport: Economic Impacts on the Colombian Market”, Vol. 148, pp. 30-42, Energy Conversion & Management. DOI: 10.1016/j.enconman.2017.05.055
11. E. A. Taborda, C. A. Franco, M. A. Ruiz, V. Alvarado\* and F. B. Cortés\*, (**2017**), “Anomalous Heavy-oil Rheological Thinning Behavior upon Addition of Nanoparticles: Departure from Einstein’s Theory”, Vol. 204, pp. 648-657, Chemical Engineering Communications*.* DOI: 10.1080/00986445.2017.1302943
12. E. A. Taborda, C. A. Franco, M. A. Ruiz, V. Alvarado\* and F. B. Cortés\*, (**2017**), “Experimental and Theoretical Study of Viscosity Reduction in Heavy Crude Oils by Addition of Nanoparticles”, Vol. 31, pp. 1329-1338,Energy & Fuels. DOI: 10.1021/acs.energyfuels.6b02686
13. G. Garcia-Olvera, T. M. Reilly, T. E. Lehmann and V. Alvarado\*, (**2017**), “Physicochemical constraints on surfactant blends under harsh conditions and evaluation of a proposed solution”, Vol. 31, pp. 95-106, Energy & Fuels. DOI: 10.1021/acs.energyfuels.6b01413
14. E. A. Taborda, V. Alvarado\*, C. A. Franco, S. A. Lopera, and F. B. Cortés\*, (**2017**), “Rheological Demonstration of Alteration in the Heavy Crude Oil Fluid Structure upon Addition of Nanoparticles”, Vol 189, pp. 322-333*,* Fuel. DOI: 10.1016/j.fuel.2016.10.110
15. M. Moradi and V. Alvarado\*, (**2016**), “Influence of Aqueous-Phase Ionic Strength and Composition on the Dynamics of Water–Crude Oil Interfacial Film Formation”,Vol 30(11), pp. 9170–9180,Energy & Fuels. DOI: 10.1021/acs.energyfuels.6b01841
16. K. Mouzakis, A.K. Navarre-Sitchler\*, G. Rother, J.L. Banuelos, X. Wang, J. Kaszuba, Q.R.S. Miller, V. Alvarado, J. McCray, J. Heath, (**2016**), “An experimental study of porosity changes in caprocks exposed to supercritical CO2. I. Evolution of mineralogy, pore connectivity, pore size distribution, and surface area”, Vol 33(10), pp. 725-735, Environmental Engineering Science. DOI: 10.1089/ees.2015.0588
17. Q.R.S. Miller, X. Wang, J. Kaszuba\*, K. Mouzakis, A.K. Navarre-Sitchler, V. Alvarado, J. McCray, G. Rother, J.L. Banuelos, J. Heath, (**2016**), “An experimental study of porosity changes in shale caprocks exposed to CO2-saturated brine II. Insights from aqueous geochemistry”, Vol 33(10), pp. 736-744, Environmental Engineering Science. DOI: 10.1089/ees.2015.0592
18. B. Morin, Y. Liu, V. Alvarado, J. Oakey\*, (**2016**), “A Microfluidic Flow Focusing Platform to Screen the Evolution of Crude Oil-Brine Interfacial Elasticity”, Vol 16, pp. 3074-3081, Lab on a Chip. DOI: 10.1039/C6LC00287K
19. G. Garcia-Olvera, T. M. Reilly, T. E. Lehmann and V. Alvarado\*, (**2016**), “Effect of Asphaltenes and Organic Acids on Crude Oil-Brine Interfacial Visco-Elasticity and Oil Recovery in Low-Salinity Waterflooding”, Vol. 185, pp. 151-163, Fuel. DOI: 10.1016/j.fuel.2016.07.104
20. E. A. Taborda, C. A. Franco, S. A. Lopera, V. Alvarado and F. B. Cortés\*, (**2016**), “Effect of Nanoparticles/Nanofluids on the Rheology of Heavy Crude Oil and Its Mobility on Porous Media at Reservoir Condition”, Vol. 184, pp. 222-232, Fuel. DOI: 10.1016/j.fuel.2016.07.013
21. X. Wang, L. Fu, and V. Alvarado\*, (**2016**), “Analysis of Capillary Pressure and Relative Permeability Hysteresis under Low-Salinity Waterflooding Conditions”, Vol. 180, pp. 228-243, Fuel. DOI: 10.1016/j.fuel.2016.04.039
22. P. Hoyer, M.S. Carvalho\* and V. Alvarado\*, (**2016**), “Snap-off in Constricted Capillary with Elastic Interface”, Vol. 28, pp. 012104, Physics of Fluids. DOI: 10.1063/1.4939150
23. G. Garcia-Olvera, T. Reilly, T. E. Lehmann, L. Wang and V. Alvarado\*, (**2016**), “Surfactant Behavior Analysis in EOR blends Using 1-D 1H NMR”, Vol. 30 (1), pp. 63–71, Energy & Fuels*.* DOI: 10.1021/acs.energyfuels.5b01840
24. M. Moradi, M. Kazempour, J. French and V. Alvarado\*, (**2014**), “Crude Oil-in-Water Emulsion Flooding for EOR”,Vol. 154, pp. 38-45*,* Fuel. DOI: 10.1016/j.fuel.2014.06.025
25. S. Raziperchikolaee, V. Alvarado and S. Yin\*, (**2014**), “Micro-scale coupled modeling of fluid flow-geomechanics-seismicity: relationship between transport and seismic source response in deformed fracture”,Vol. 110*,* pp. 6958-6975, Journal of Geophysical Research – Solid Earth. DOI: 10.1002/2013JB010758
26. R.V. Ponce, M.S. Carvalho\* and V. Alvarado, (**2014),** “Oil recovery modeling of macro emulsion flooding at low capillary number”, Vol. 119*,* pp. 112-122,Journal of Petroleum Science & Engineering. DOI: 10.1016/j.petrol.2014.04.020
27. S. Raziperchikolaee, V. Alvarado and S. Yin\*, (**2014),** “Prediction of transport properties of deformed fractured rock by hydro-mechanical coupled modeling”,Vol. 104(1)*,* pp. 1-23,Transport in Porous Media. DOI 10.1007/s11242-014-0317-4
28. S. Raziperchikolaee, V. Alvarado\* and S. Yin, (**2014**), “Effect of fracture roughness on seismic source and fluid transport responses”,Vol. 41(5), pp. 1530-1536*,* Geophysical Research Letters. DOI: 10.1002/2013GL058683
29. A. Padhi, S. Mallick\*, S.H. Behzadi and V. Alvarado, (**2014**),“A practical approach to efficiently model the seismic signature of patchy saturation for time lapse monitoring of carbon sequestrated deep saline reservoirs”, Vol. 114, pp. 445-455, Applied Energy. DOI: 10.1016/j.apenergy.2013.10.016
30. M. Moradi, E. Topchiy, T.E. Lehmann\* and V. Alvarado\*, (**2013**), “Impact of Ionic Strength on Partitioning of Naphthenic Acids in Water-Crude Oil Systems - Determination through High-Field NMR Spectroscopy”, Vol. 112, pp. 236-248,Fuel. DOI: 10.1016/j.fuel.2013.05.024
31. G.B.L. Nogueira, M.S. Carvalho\* and V. Alvarado\*, (**2013**), “Dynamic network model of mobility control in emulsion flow through porous media”, Vol. 98(2), pp. 427-441, Transport in Porous Media. DOI: 10.1007/s11242-013-0151-0
32. B.S. Engelke, M.S. Carvalho\* and V. Alvarado\*, (**2013**), “Conceptual Representation of Macro-scale Oil-Water Emulsions through Relative Permeability Curves”, Vol. 27(4), pp. 1967–1973, Energy & Fuels. DOI: 10.1021/ef301429v
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3. Four reports with Norwest-Questa Engineering Corporation.
4. Four reports for Petrobras, Feasibility of Time-lapse seismic.
5. S. Nivarthi, R. Kumar, V. Alvarado, Y. Kutsovsky, H. T. Davis, D. Kroll, and R. Maier, Lattice Boltzmann Simulations of Taylor-Aris Dispersion, AHPCRC Preprint 97-014, 1997.
6. V. Alvarado, H. T. Davis and L. E. Scriven, Effects of Pore-Level Reaction on Dispersion in Porous Media, AHPCRC Preprint 96-050, 1996
7. More than 25 internal reports at PDVSA-Intevep, Los Teques, Venezuela.

**6. PRESENTED PAPERS/SYMPOSIA/INVITED LECTURES/PROFESSIONAL MEETINGS/WORKSHOPS**

**Invited Lectures/Workshops/Seminars/Talks**

1. G. Garcia-Olvera, T. Reilly, T.E. Lehmann, V. Alvarado, Analysis of Physico-Chemical Constraints on Surfactant Blends for Offshore Reservoirs, Offshore Technology Conference (OTC), Houston, TX, 2-5 May, **2016**.
2. V. Alvarado, Present & Future of Low Salinity Waterflooding, Brazil Onshore, Natal, Rio Grande do Norte, Brazil, 25-27 November, **2014**.
3. V. Alvarado, Maximizing Water Flooding with Smart Chemical Solutions, 2014 Improved Oil recovery 11th Global Praxis Interactive Technology Workshop, Bogota, Colombia, August 25-27, **2014**
4. V. Alvarado, Minnelusa IOR/EOR options and feasibility, EORI Minnelusa Workshop, Gillette, WY, June 6-7, **2014**.
5. V. Alvarado, Complex Fluids and Interfaces and Waterflooding Enhancement Connections, 3rd International Workshop on Complex Physical Phenomena in Materials, Pontifica Universidade Católica do Rio de Janeiro, Brazil, February 17-22, **2014**.
6. T. Lehmann, M., Moradi, E., Topchiy and V. Alvarado, Determination of naphthenic acids partitioning in water-crude oil systems through 1-D high-field NMR spectroscopy, 246th ACS National Meeting & Exposition -September 8-12, 2013, Indianapolis, IN20244, **2013**.
7. V. Alvarado, Water Chemistry, Rock-Fluid Interaction and Performance of Chemical Floods, IV International Seminar on Oilfield Water Management, Rio de Janeiro, Brazil, 28-30 August, **2013**.
8. V. Alvarado, Minnelusa IOR/EOR options and feasibility, EORI Minnelusa Workshop, Gillette, WY, May 6-7, **2013**.
9. T. E. Lehmann, M. Moradi, E. Topchiy, T. E. Lehmann, V. Alvarado Determination of naphthenic acids partitioning in water-crude oil systems through 1-D high-field NMR spectroscopy, 246th ACS National Meeting & Exposition, Division of Energy and Fuels, Analytical Methods in Petroleum Upstream Applications, 20244 Indianapolis, IN, September 8-12, **2013**.
10. V. Alvarado and E.J. Manrique, Engineering Design Challenges and Opportunities beyond Waterflooding in Offshore Reservoirs, Offshore Technology Conference, Houston, Texas, 6-9 May, **2013**.
11. V. Alvarado, Interfacial Effects in Multiphase Flow thru Porous Media, Department Seminar, Department of Chemical and Biomolecular Engineering, Houston, TX, November 11, **2012**.
12. V. Alvarado, H. Behzadi, S. Mallick and A. Pahdi, Capillary trapping effects on CO2 distribution during buoyancy-driven flow (**Invited**), 9th Biennial International Conference and Exposition: Hyderabad-2012, Hyderabad, India, February 16-18, **2012**.
13. CO2 Sequestration short course (in cooperation with Prof. Mallick and Dr. Erin Campbell-Stone), “9th Biennial International Conference and Exposition: Hyderabad-2012”, Hyderabad, India, February 16-18, **2012**.
14. V. Alvarado, EOR Screening, 3rd Annual Wyoming IOR/EOR Conference, Jackson, WY, September 12-13, **2011**.
15. V. Alvarado, International Energy Workshop, Buzios, RJ, Brazil, June 16th – 17th, **2011**.
16. V. Alvarado, Emulsion Flow in Porous Media: Capillary Number Control and Emulsion Stability, Department Seminar, Department of Chemical and Biological Engineering, Fort Collins, CO, February 11, **2011**.
17. V. Alvarado, Invited Speaker, International Workshop on Complex Physical Phenomena in Materials, Recife-PE, Brazil, December 14-17, **2010**
18. V. Alvarado, Invited Speaker, International Workshop on CO2 and Fluids In Nanoscience, Brasilia-DF, Brazil, December 7-10, **2010**.
19. V. Alvarado, Emulsion Flooding for IOR Processes: Recovery Mechanisms and Emulsion Stability, Department Seminar, Department of Chemical and Biomolecular Engineering, Houston, TX, November 11, **2010**.
20. V. Alvarado, Emulsion Flooding for IOR Processes: Recovery Mechanisms and Emulsion Stability, EORI Brownbag Seminar, Laramie, WY, August 27, **2010**.
21. V. Alvarado, Screening Chemical Flooding Processes: From Field Data to Field Modeling, BIT’s 1st Annual Congress of EOR: Well Stimulation and EOR Congress 2010, Chengdu, China, April 12-14, **2010**.
22. S. Mallick, P.K. Mukhopadhyay, A. Pahdi, and V. Alvarado. Application of geophysical data in monitoring of carbon-sequestrated deep saline aquifers- a feasibility study, Invited paper for Insignia, Society of Petroleum Geophysicists, **2010**.
23. V. Alvarado, L. E. Scriven, and H. T. Davis\*, Dispersion and First-Order Reaction in Network Models of Porous Media, Invited Talk at Waterways Experiment Station and AHPCRC Joint Conference in Vicksburg, MS, **1994**.

**Conference Presentations**

1. E. Taborda, C. Franco, R. Zabala, V. Alvarado, F. Cortés, Nanotechnology to Increase the Mobility of Heavy Crude Oil on Porous Media: First Pilot Test Worldwide, 5th Nano Today Conference, Hawaii, USA, December 6-10, **2017**.
2. X. Wang, V. Alvarado, Effects of Low-Salinity Waterflooding on Capillary Pressure Hysteresis, 2016 SPE Improved Oil Recovery Symposium, Tulsa, OK, 11-13 April, **2016**
3. G. Garcia-Olvera, V. Alvarado, The Potential of Sulfate as Optimizer of Crude Oil-Water Interfacial Rheology to Increase Oil Recovery During Smart Water Injection in Carbonates, 2016 SPE Improved Oil Recovery Symposium, Tulsa, OK, 11-13 April, **2016**.
4. V. Alvarado, G. Garcia-Olvera, E.J. Manrique, Considerations of Adjusted Brine Chemistry for Waterflooding in Offshore Environments, Offshore Technology Conference Brasil, Rio de Janeiro, Brazil, 27-29 October, **2015**.
5. G. Garcia-Olvera, P. Hoyer, V. Alvarado, Impact of Polar Components on Crude Oil-Water interfacial Film Formation: A Mechanisms for Low-Salinity Waterflooding, Annual Technology Conference & Exhibition, Amsterdam, The Netherlands, 27 – 29 October, **2014.**
6. K. van ‘t Veld, V. Alvarado, X. Wang, Economic Co-optimization of Oil Recovery and CO2 Sequestration, Annual Technology Conference & Exhibition, Amsterdam, The Netherlands, 27 – 29 October, **2014**.
7. X. Wang and V. Alvarado, Experimental Study on Capillary Pressure, Relative Permeability, Resistance Hysteresis and the Impact of Low Salinity, IPOR-6, Milwaukee, WI, 27-30 May, **2014**.
8. V. Alvarado, M. Moradi, G. Garcia-Olvera, B. Morin, J. Oakey. Interfacial Visco-Elasticity of Crude Oil - Brine: An Alternative EOR Mechanism in Smart Waterflooding, 2014 SPE Improved Oil Recovery Symposium, Tulsa, OK, 12-16 April, **2014**.
9. M. Yu, Y. Chang, P. Marcy, S. Huzurbazar, V. Alvarado, Sensitivity Study on Storage of CO2 in Saline Aquifer with Fracture-Surrogate Models Based on the Tensleep Formation, 2014 SPE Western North America and Rocky Mountain Joint Regional Meeting, Denver, CO, 16-18 April, **2014**.
10. R.V. Ponce Flores, M.S. Carvalho and V. Alvarado, Emulsion Flow Model Based on Mobility Control and

Displacement Efficiency Effects, 22nd International Congress of Mechanical Engineering (COBEM 2013), Ribeirão Preto, SP, Brazil, November 3-7, **2013**.

1. M. Moradi, E. Topchiy, T. E. Lehmann, V. Alvarado, Interfacial shear Rheology of crude oil-water interface: Impact of aqueous phase ionic strength and composition on interfacial elasticity, 87th Colloid and Surface Science Symposium, COLL372, June 23-26, **2013**.
2. M. Moradi, A. Brandvik and V. Alvarado, Interfacial Rheology of Crude Oil-Water Interface: Influence of Water Chemistry, The XVIth International Congress on Rheology, Lisbon, Portugal, August 5-10, **2012**.
3. M. Moradi, E. Topchiy, T. E. Lehmann, V. Alvarado, Investigation on the role of Naphthenic acids on water-in-crude oil interfacial viscoelasticity through high-field NMR: Impact of aqueous phase ionic strength and composition, 2012 ACS Colloids and Surfaces Symposium, Baltimore, MD, June 10-13, **2012**.
4. M. Moradi, M. Kazempour and V. Alvarado, Crude Oil-in-water Emulsion Flooding for EOR, 74th EAGE Conference & Exhibition/SPE EUROPEC, Copenhagen, Denmark, 4-7 June, **2012**.
5. M. Moradi and V. Alvarado, Effect of oil-to-water ratio on the stability of water-in-crude oil emulsion, Paper 14665, 242nd ACS National Meeting, Denver, Colorado, August 28 – September 1, **2011**.
6. X. Wang, V. Alvarado and J. Kaszuba, Dolomite Reactivity in Water-Saturated Supercritical CO2, Paper 15469, 242nd ACS National Meeting, Denver, Colorado, August 28 – September 1, **2011**.
7. M. Kazempour, E. Sundstrom and V. Alvarado, Geochemical modeling and experimental evaluation of high-pH floods: Impact of water-rock interactions in sandstone, SPE EUROPEC/EAGE Annual Conference and Exhibition, Vienna, Austria, 23–26 May **2011**.
8. V. Alvarado and S. Mallick, Multiphase flow simulation modeling of CO2 storage for monitoring purposes, POSTER, Abstract 1715, 10th Annual Conference on Carbon Capture & Sequestration, Pittsburgh, PA, May 2-5, **2011**.
9. S. Mallick and V. Alvarado, Seismic signature of a carbon-sequestrated brine reservoirs, POSTER, Abstract 1488, 10th Annual Conference on Carbon Capture & Sequestration, Pittsburgh, PA, May 2-5, **2011**.
10. X, Wang, V. Alvarado, N. G. Swoboda-Colberg, J. Kaszuba, Dolomite Reactivity in Water-saturated Supercritical CO2, POSTER, Abstract 785, 10th Annual Conference on Carbon Capture & Sequestration, Pittsburgh, PA, May 2-5, **2011**.
11. M. Kazempour, E. Sundstrom and V. Alvarado, Effect of Alkalinity on Oil Recovery during Polymer Floods in sandstone, SPE International Symposium on Oilfield Chemistry, The Woodlands, TX, USA, 11-13 April **2011**.
12. X. Wang and V. Alvarado, Probing Interfacial Emulsion Stability Controls using Electrorheology, 63nd Annual Meeting of the APS Division of Fluid Dynamics, Long Beach, California, November 21–23, **2010**.
13. M. Moradi and V. Alvarado, Structural Relaxation of Water-in-Oil Emulsion under Direct Current Electric Field, 63nd Annual Meeting of the APS Division of Fluid Dynamics, Long Beach, California, November 21–23, **2010**.
14. P.K. Mukhopadhyay, S. Mallick, A. Pahdi, and V. Alvarado, Time-lapse monitoring carbon sequestrated brine aquifers- a feasibility study, Annual International Meeting of SEG, Denver, October 17-22, **2010**.
15. V. Alvarado, M. Carvalho and M. Romero, Flow of Emulsions in Porous Media (Poster), Gordon Research Conference on Flow & Transport In Permeable Media, Lewiston, ME, July 11-16, **2010**.
16. M. Moradi and V. Alvarado, Effect of salinity on water-in-crude oil emulsion stability: Evaluation of drop-size distribution proxy, 84th Colloid and Surface Science Symposium, Akron, OH, June 20-23, **2010**.
17. S.H. Behzadi and V. Alvarado, Impact of Three-phase Relative Permeability Model on Recovery in Mixed Media – Miscibility, IFT and Hysteresis Issues, EAGE Barcelona , Spain, June 14-17, **2010**.
18. S.H. Behzadi and V. Alvarado, Selection of Three-Phase Relative Permeability Model for Mixed-Wet Reservoirs, 2010 SPE Western North American Regional Meeting, Anaheim, CA, 27-29 May **2010**.
19. E. Manrique, C. Thomas, R. Ravikiran, M. Izadi, M. Lantz, J. Romero and V. Alvarado, EOR: Current Status and Opportunities, 2010 SPE Improved Oil Recovery Symposium held in Tulsa, Oklahoma, USA, 24–28 April **2010**.
20. X. Wang and V. Alvarado\*, Direct Current Electrorheological Stability Determination of Water-in-Crude Oil emulsions, 62st Annual Meeting of the APS Division of Fluid Dynamics, Minneapolis, MN, Nov. 21-23, **2009**.
21. G. Thyne\*, V. Alvarado and G. Murrell, Evaluation of Chemical Flooding in the Minnelusa Formation, Powder River Basin, Wyoming, Annual AAPG Annual Convention and Exhibition, Denver, CO, 7-10 June, **2009**.
22. X. Wang, H. Plancher and V. Alvarado\*, Stability determination of crude oil emulsions by electrorheological measurement, 61st Annual Meeting of the APS Division of Fluid Dynamics, San Antonio, TX, Nov. 23-25, **2008**.
23. X. Wang and V. Alvarado\*, Effect of Salinity and pH on Pickering Emulsion Stability, 2008 SPE Annual Technical Conference and Exhibition, Denver, Colorado, USA, 21-24 September **2008**.
24. G. Thyne, G.R. Murrell, V. Alvarado\*, Screening Strategy for Chemical Enhanced Oil Recovery in Wyoming Basins, 2008 SPE Annual Technical Conference and Exhibition, Denver, Colorado, USA, 21-24 September **2008**.
25. E. Manrique, M. Izadu, C. Kitchen and V. Alvarado\*, Effective EOR Decision Strategies With Limited Data: Field Cases Demonstration, 2008 SPE Improved Oil Recovery Symposium, Tulsa, Oklahoma, 19-23 April **2008**.
26. S. Cobos, V. Alvarado and M.S. Carvalho\*, Flow of oil-water emulsion through constricted capillary tubes, The XVth International Congress on Rheology, Monterrey, California, August 3-8, **2008**.
27. V. Alvarado\*, S. Cobos, M. Carvalho, Characterization of Emulsion Flow through a Pore-Throat Capillary Model, 60th Annual Meeting of the APS Division of Fluid Dynamics, Salt Lake City, Utah, November 18-20, **2007**.
28. X. Wang, N. Morrow and V. Alvarado\*, Stability of Clay-Stabilized Emulsions, Paper 46161 presented at the ACS Rocky Mountain Regional Meeting, Denver, CO, August 29-September 1, **2007**.
29. T. Peña\*, M. S. Carvalho, and V. Alvarado, Snap-off of an oil drop immerse in water flowing through a constricted capillary, 19th International Congress of Mechanical Engineering (COBEM), Brasilia-Brazil, Nov. **2007**.
30. S. Cobos\*, M. S. Carvalho, and V. Alvarado, Flow of drops immersed in a liquid phase through capillary tubes, 19th International Congress of Mechanical Engineering (COBEM), Brasilia-Brazil, November **2007**.
31. V. R. Guillén\*, M. S. Carvalho, and V. Alvarado, Oil Displacement by Oil-Water Emulsion Injection in Coreflooding Experiments, 19th International Congress of Mechanical Engineering (COBEM), Brasilia-Brazil, November **2007**.
32. C. S. Claudino\*, W. M. Figueiró, F. A. V. Artola, V. Alvarado, and B. H. M. Martins, Modelagem sísmica time-lapse com base em simulacão de fluxo em reservatórios, 10th International Congress of The Brazilian Geophysical Society, **2007**.
33. F. A. V. Artola, V. Alvarado, and W. Figueiro\*, Reflexão Crítica Time Lapse: Sensibilidade e Análise de Incerteza da Variação da Velocidade da Onda P devido a Substituição de Fluidos, a Partir da Variação do Afastamento Crítico, 10th International Congress of The Brazilian Geophysical Society, **2007**.
34. F. A. V. Artola, W. Figueiró, and V. Alvarado\*, Time lapse critical reflection: sensitivity and uncertainty analysis, 77th Annual International Meeting, SEG, San Antonio, TX, 23-28 September, **2007**.
35. S. Cobos\*, M. S. Carvalho and V. Alvarado, Experimental study of emulsion flow through a pore-throat capillary model, Brazilian Society of Mechanical Sciences and Engineering – ABCM, Curitiba, Brazil, Dec. 5-8, **2006**.
36. T. Peña\*, M. S. Carvalho and V. Alvarado, Visualization of emulsion generation mechanism in pore-neck glass models, Brazilian Society of Mechanical Sciences and Engineering – ABCM, Curitiba, Brazil, Dec. 5-8, **2006**.
37. V. Alvarado\*, E.-M. Reich, Y. Yunfeng, and K. Potsch, Integration of a Risk Management Tool and an Analytical Simulator for Assisted Decision-Making in IOR, SPE Europec/EAGE Annual Conference and Exhibition, Vienna, Austria, 12-15 June **2006**.
38. V. Alvarado\*, E.-M. Reich , Y. Yunfeng , and K. Potsch, Integration of a Risk Management Tool and an Analytical Simulator for Assisted Decision-Making in IOR, SPE Intelligent Energy Conference and Exhibition, Amsterdam, The Netherlands, 11-13 April **2006**.
39. F. Artola\*, S. Fontoura, V. Alvarado, Sensitivity Analysis in Various Inversion Schemes for Evaluation Saturation and Pressure changes in the Context of 4D Seismic Studies, SBGf, Salvador **2005**.
40. L. Surguchev\*, E. Manrique and V. Alvarado, Improved Oil Recovery, 18th World Petroleum Congress, Johannesburg, South Africa, September, **2005**.
41. M. T. Stirpe, J. Guzman UCV, E. Manrique, V. Alvarado\*, Cyclic Water Injection Simulations for Evaluations of its Potential in Lagocinco Field, SPE/DOE Fourteenth Symposium on Improved Oil Recovery held in Tulsa, Oklahoma, U.S.A., 17–21 April, **2004**.
42. V. Alvarado\*, A. Ranson, K. Hernández, E. Manrique, J. Matheus, T. Liscano, N. Prosperi, Selection of EOR/IOR Opportunities Based on Machine Learning, SPE 13th European Petroleum Conference, Aberdeen, UK, **2002**.
43. V. Alvarado\*, M. Stirpe, C. La Roque, R. Ponce, M. Farias, Streamline Simulation for Enhanced-Oil Recovery: Review and Laboratory Tests, IV International Seminar, Exploration and Exploitation of Oil and Gas, INGEPET, Lima, Perú, **2002**.
44. C. Ovalles\*, A. Fonseca, A. Lara, V. Alvarado, K. Urrechaga, A. Ranson and H. Mendoza, Opportunities of Downhole Dielectric Heating in Venezuela: Three Case Studies Involving Medium, Heavy and Extra-Heavy Crude Oil Reservoirs, SPE International Thermal Operations and Heavy Oil Symposium and International Horizontal Well Technology Conference, Calgary, Alberta, Canada, **2002**.
45. K. Y. Hernández, T. Liscano, E. A. Ranson, E. Manrique, J. Matheus and V. Alvarado\*, Use of Machine Learning for EOR Method Selection in Venezuelan Reservoirs, 23rd Annual Workshop and Symposium Collaborative Project on EOR, Caracas, Venezuela, **2002**.
46. P. A. Díaz\*, V. Alvarado and M. I. Rodríguez, Dissolution of calcite in CaCO3-CO2-H2O systems in porous media, Tenth International Symposium on Water-Rock Interaction, Villasimus, Italy, **2001**.
47. A. Fonseca, V. Alvarado, C. Ovalles\*, H. Franco and N. Urbano, Numerical Simulation of Electromagnetic Heating for EOR, V Latin American and Caribbean Congress on Fluid Mechanics, Caracas, Venezuela, **2001**.
48. V. Alvarado\*, E. Manrique, F. R. Ponce and P. C. López, Computer-Aided Analysis of Tracer Dispersion in Composite Core: Tests of Two- and Three-Phase Flow Experiments, International Symposium on Oilfield Chemistry, Houston, TX, **2001**.
49. Y. Meléan and V. Alvarado\*, Simulación Estocástica del Transporte de Trazadores a través de Medios Porosos en Condiciones Bifásicas, II Congreso Venezolano de Física, Cumaná, Venezuela, **2000**.
50. A. Macias and V. Alvarado\*, Difusividad Efectiva en Medios Heterogéneos Digitalizados, II Congreso Venezolano de Física, Cumaná, **2000**.
51. E. Medina, R. Paredes, R. F. Angulo, V. Alvarado\* and J. Valbuena, Del Núcleo al Modelo de Yacimiento, I Foro de Investigación y Desarrollo de Tecnologías Claves para el Negocio Petrolero, PDVSA Intevep, Los Teques, **1999**.
52. V. Alvarado\* and A. A. Rodríguez, Pore Network Model of a Bubble-Driven Drainage Process, 6th Latin American and Caribbean Petroleum Engineering Conference, Caracas, **1999**.
53. V. Alvarado\*, A. A. Rodríguez and J. R. Valbuena, Escalamiento de Procesos de Convección-Dispersión en Redes Jerárquicas Bidimensionales, XLVIII Convención Anual de AsoVAC, Maracaibo, Venezuela, **1998**.
54. J. R. Valbuena and V. Alvarado\*, Estrategias Computacionales de Escalamiento de Propiedades de Transporte en Medios Porosos, XLVIII Convención Anual de AsoVAC, Maracaibo, Venezuela, **1998**.
55. Y. Meléan and V. Alvarado\*, Estudio de los Efectos de Distribuciones de Factores de Retardo en Medios Porosos: Uso de la Ecuación de Fokker-Planck, XLVIII Convención Anual de AsoVAC, Maracaibo, Venezuela, **1998**.
56. V. Alvarado\* and J. Valbuena, Influence of surface reaction on the scaling of the tracer response in hierarchical porous media, XXth IUPAP International Conference On Statistical Physics, Paris, France, **1998**.
57. A. A. Rodríguez and V. Alvarado\*, Pore network simulation of a bubble-driven drainage process, XXth IUPAP International Conference on Statistical Physics, Paris, France, **1998**.
58. V. Alvarado, Stochastic-perturbation Analysis of Solute Transport through Porous Media with Spatially Variable Retardation Factor, I Congreso Venezolano de Física, Mérida, Venezuela, **1997**.
59. V. Alvarado, L. E. Scriven, and H. T. Davis\*, Stochastic-Perturbation Analysis of a Convection-Dispersion-Reaction Equation: Effects of Spatially Variable Reaction Rates, Fourth SIAM Conference on Mathematical and Computational Issues in the Geosciences, Albuquerque, NM, **1997**.
60. V. Alvarado\*, J. Valbuena and A. A. Rodríguez, Scaling Behavior of the Transit-time Distribution Moments of Reactive Tracers, APS March Meeting, Kansas City, MO, **1997**.
61. V. Alvarado\*, L. E. Scriven and H. T. Davis, Análisis de Perturbación Estocástica de la Ecuación de Convección-dispersión-reacción en Medios Porosos, XLVI Convención Anual de la AsoVAC, Barquisimeto, **1996**.
62. Y. Kutsovsky, V. Alvarado, L. E. Scriven, H. T. Davis\*, and B. Hammer, Third International Meeting on Recent Advances in MR Applications to Porous media, **1995**.
63. R. Angulo\*, V. Alvarado, and H. Gonzalez, Fractal Dimension from Mercury Intrusion Capillary Tests and Imaging Processing, SPE, Caracas, Venezuela, **1992**.
64. V. Alvarado\*, J. Guzman, and I. Kancev, Oil Reservoir Sandstone Evaluation with Digital Backscattered Electron Imaging, SPE, Caracas, Venezuela, **1992**.
65. V. Alvarado and R. F. Angulo\*, Scaling Properties of Sedimentary Rocks, 2nd Latin American and Caribbean Petroleum Engineering Conference, Caracas, **1992**.
66. R. F. Angulo\* and V. Alvarado, Multiscaling Sets, 2nd Latin American and Caribbean Petroleum Engineering Conference, Caracas, **1992**.
67. R. F. Angulo\* and V. Alvarado, ACS 65th Colloid & Surface Science Symposium, Norman, OK, USA, **1991**.
68. R. F. Angulo\* and V. Alvarado, Escalamiento: Un Nuevo Enfoque para el Análisis de la Geometría de Rocas y el Transporte en Medios Porosos, 9nas Jornadas Técnicas de Petróleo, Sociedad Venezolana de Ingeniería de Petróleo, Maracaibo, Venezuela, **1991**.
69. V. Alvarado\*, J. Guzmán, and I. Kancev, Caracterización de Rocas Sedimentarias a traves de Electrones Reflejados, 9nas Jornadas Técnicas de Petróleo, Sociedad Venezolana de Ingeniería de Petróleo, Maracaibo, Venezuela, **1991**.
70. V. Alvarado and R. Paredes\*, Aplicaciones de los Automatas Celulares en la Hidrodinámica en Medios Porosos, Estado del Arte en Mecánica de Fluidos Computacional, Intevep, Los Teques, Venezuela, **1991**.

**7.** **CONTRACTS & GRANTS**

**7.1 Funded Projects**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Contract or Grant Title | Sponsor | Start and  End Date | Budget | Percentage Credit\* |
| Interfacial Viscoelastic Measurements at High Temperature | Corelab/PEMEX | 11/17-06/18 | $20,000 | 100%  (PI) |
| Advanced Optical Measurements of Ice Adhesion  on Icephobic Aircraft Surfaces | NASA | 09/17-08/20 | $749.565.00 | 33%  (Co-PI) |
| Emulsion analysis under alkaline flooding conditions in heavy oil reservoirs | SUNCOR | 01/17-12/17 | $88,397.25 | 70%  (PI) |
| Surfactant-enhanced waterflooding | Baker Hughes, Inc. | 07/16-12/16 | $50,000.00 | 100%  (PI) |
| Integrated characterization of CO2 storage reservoirs on the Rock Springs Uplift combining geomechanics, geochemistry, and flow modeling | DOE | 11/14-03/18 | $1,400,255.00 | 30%  (Alt-PI) |
| ASP/SP/P Designs and Advanced Screening/Scoping Evaluations | EORI | 07/14-06/15 | $125,000 | 100%  (PI) |
| uncertainty reduction in monitoring methods for improved CO2 quantity estimation (uniCQue) | Norwegian Research Council | 01/14-12/16 | kNOK 3,250  (~$526,000) | 10%  (Co-PI) |
| Molecular structuring in solution of the polymer technology Colloidal Dispersion Gel | TIORCO LLC | 06/13-05/15 | $371,614 | 40%  (Co-PI) |
| Dynamic Interfacial Elasticity Control over Emulsion Formation and Stability | SER | 09/13-08/14 | $26,000 | 50%  (Co-PI) |
| Characterization of Unconventional Rock through Diffusion Probes | SER | 09/13-08/14 | $26,000 | 50%  (PI) |
| Investigation of Causes of Productivity Impairment during SP Flooding in Salem Field | TIORCO LLC | 10/12-08/13 | $94,017.09 | 50%  (PI) |
| Economic Co-Optimization of Oil Recovery and CO2 Sequestration Based on Reservoir Simulations | Center for Energy Economics & Public Policy | 07/12-06/14 | $140,000 | 50%  (Co-PI) |
| Evaluation of sequestration in depleted oil reservoir and aquifer in WY | WY Geological Survey | 07/12-06/13 | $120,000 | 100%  (PI) |
| ASP Field Design | EORI | 07/12-06/13 | $110,000 | 100%  (PI) |
| NMR Microimaging System | SER | 05/12-10-12 | $495,000 | 25%  (PI) |
| Effect of wettability on emulsion flow through porous media (funds used in Brazil to cover Sabbatical and students’ cost) | REPSOL | 2012-2014 | $979,146.92  (R$1,845,594) | 30%  (Co-PI) |
| Emulsion formation and rheology with heavy oils (funds used in Brazil) | Chevron-Brazil | 01/12-12/14 | R$1,525,349  ($904,715) | 33%  (Co-PI) |
| Experimental determination of oil-water capillary pressure and relative permeabilities at high differential stress | ANIDE | 11/11-02/12 | $60,000 | 100%  (PI) |
| Reservoir Simulation for Simultaneous Optimization of CO2 Storage and EOR  (through Economics and Finance Department) | SER | 01/12-06/12 | $40,000 | 100%  (PI) |
| Center for Unconventional Reservoirs | SER | 10/11-07/12 | $102,970 | 33%  (Co-PI) |
| EOR: Analysis of Polymer and ASP flooding for offshore reservoirs | Chevron-Brazil | 01/12-12/14 | $2,000,341  (R$3,192,547) | 20%  (Co-PI) |
| EOR Screening System for Definition of SEC-valid analogs | TIORCO LLC. | 05/11-05/13 | $124,786 | 100%  (PI) |
| Improved recovery of heavy oils by downhole electromagnetic heating | Chevron ETC | 08/11-12/11 | $30,000 | 100%  (PI) |
| ASP Design & EOR Data-Driven Screening | EORI | 07/11-06/12 | $120,000 | 100%  (PI) |
| Anadarko Fellowship for Excellence in Energy Scholarship | SER | 01/11-12/11 | $15,000 | 100%  (PI) |
| Integration of Geomechanics and Passive Seismic for leakage prevention and Risk Mitigation in CO2 Storage (SER-GA) | SER | 08/11-06/13 | $51,964 | 50%  (PI) |
| Chemical Flooding Unit Renewal | EORI | 07/10-06/11 | $191,000 | 100%  (PI) |
| Feasibility of geophysical monitoring of carbon-sequestrated deep saline aquifers | DOE-NETL | 10/09-09/12 | $1,517,563 | 50%  (Co-PI) |
| Site characterization of the highest-priority geologic formations for CO2 storage in Wyoming (Task 6) | DOE-NETL | 01/10-12/12 | $522,330 | 50%  (Co-PI) |
| Interactive reservoir and IOR evaluation model | IRIS, Norway | 10/09-09/11 | $103,457  *PI Declined* | 100%  (PI) |
| Monitoring of Hydrocarbon & Carbon sequestrated Formations Using Time-lapse Seismic & Electromagnetic Data (2xGAs) | SER | 08/09-09/11 | $124,224 | 25%  (Co-PI) |
| Water Chemistry Modification for Improved-Oil Recovery: Chemical, Interfacial & Rheological Mechanisms in Porous Media | SER | 08/09-09/11 | $62,212 | 100%  (PI) |
| Chemical Flooding Unit Renewal | EORI | 07/09-06/10 | $137,000 | 100%  (PI) |
| Chemical Flooding Unit Renewal | EORI | 07/08-06/09 | $137,000 | 100%  (PI) |
| Investigation of Adjusted Brine Chemistry for Enhanced Oil Recovery | EORI | 07/08-06/09 | $287,000 | 50%  (Co-PI) |
| Chemical Flooding Unit | EORI | 07/07-06/08 | $227,000 | 100%  (PI) |
| Search for mechanisms of coke suppression with a literature survey on analog systems subject to microwave and radiofrequency irradiation | Chevron ETC | 06/07-08/07 | $17,850 | 100%  (Lead) |
| Graduate Assistantship | SER | 08/07-07/09 | $48,400 | 50%  (Co-PI) |

**7.2** **Pending Projects**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Contract or Grant Title | Sponsor | Start and  End Date | Budget | Percentage Credit\* |
| Effective geo-techniques for quantitative monitoring of the carbon-dioxide sequestered reservoirs | DOE | 01/18-12/20 | $1,992,281 | 25%  (Co-PI) |

**7.3 Proposals not accepted**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Contract or Grant Title | | Sponsor | Date Submitted | | Budget | Percentage Credit\* | |
| Emulsions Stability and Flow Properties ex Situ during Alkaline Floods | ExxonMobil URC | | 08/16-07/17 | $72,933.71 | | | 70%  (PI) | |
| SiGNa Metal Silicides Technology: Evaluation of IOR/EOR Mechanisms | SiGNa | | 08/16-07/17 | $143,339.20 | | | 70%  (PI) | |
| An efficient multi-physics, multi-scale, and multi-component optimization and uncertainty quantification tool for energy-related applications | DOE | | 09/16-09/19 | $1,020,131.00 | | | 30%  (Co-PI) | |
| Economic Feasibility of Improving CO2 Storage in Tensleep Sandstone ROZs by Injecting Mixtures of CO2 and Flue-Gas Impurities for EOR | DOE-NETL | | 10/14-10/17 | 2,600,263.00 | | | 20%  (PI) | |
| Frontier research center for the next generation reservoir characterization and monitoring | DOE | | 09/14-08/19 | $16,232,012.00 | | | 15%  (Co-PI) | |
| Identifying CO2-Utilization Elasticities for Use in Integrated Assessment Models | DOE-NETL | | 09/14-08-17 | $519,997.27 | | | 50%  (PI) | |
| NMR Diffusion Imaging for Characterizing Shale  Gas Transport | | RPSEA | 09/13-08/15 | | $835,802.00 | 33%  (PI) | |
| NMR diffusion response for determining the Impact of water saturation on shale gas transport | | DOE-NETL | 09/13-08/16 | | $1,192,522 | 33%  (PI) | |
| 3-D anisotropic waveform inversion | | WesternGeco | 07/11-07/13 | | $240,000 | 33%  (Co-PI) | |
| Molecular Origin of Elasticity in Water-in-Oil Systems via NMR | | SER | 09/13-08/14 | | $26,000 | 50%  (PI) | |
| Modeling of improved recovery of heavy oils by downhole electromagnetic heating | | Chevron ETC | (postponed) | | $120,000 | 100%  (PI) | |
| Evaluation and Modeling of Electrokinetic Effects in Radiofrequency Irradiation of Heavy-Oil While Upgrading | | Chevron ETC | (postponed) | | $300,581 | 100%  (PI) | |
| Improved Oil Recovery – Ultra-Deepwater Program | | Baker-Hughes  (RPSEA) | 2012-2013 | | $883,954.40  ($1,988,720) | 44%  (Co-PI) | |
| Wyoming Energy, Ecology, and Economics (WE3) IGERT | | NSF | 2012-2017 | | $3,259,739 | 15%  (Co-PI) | |
| Geophysical Monitoring of Carbon-sequestrated formations using reservoir flow simulation, time-lapse seismic and time-lapse electromagnetic data | | NRC | 10/10-09/13 | | $835,275 | 33%  (Co-PI) | |
| Enhancement of CO2 storage in deep saline aquifers using passive seismic data- a feasibility study | | DOE | 09/10-08/13 | | $1,999,751 | 20%  (Co-PI) | |
| Conditioning of Produced Water Reinjection | | ITF | 09/11-08/13 | | £342.300  ($527,735) | 66%  (PI) | |
| Study of dispersion injection as enhanced-oil recovery method. Preliminary analysis of adjusted water chemistry. | | PUC-Rio  Subcontrator with Petrobras | 12/09-12/12 | | $80,000 | 100%  (PI) | |
| Flow properties of Pickering emulsions of crude oil-brine stabilized with naturally occurring clays | | ACS-PRF | 09/08 | | $100,000 | 100%  (PI) | |
| Tight Gas Reservoirs: Experimentation and Modeling of Hysteresis and its Implications for Gas Recovery | | DOE-EPSCOR | 01/08 | | $2,803,646 | 33%  (Co-PI) | |