



Shibo Wang, Ph.D., EIT

Curriculum Vitae

(Updated as of November 2015)

Career Goals

Global Leader in Energy and Environment, especially in Promoting Energy Resources Engineering, Enhanced Oil and Gas Recovery, and Geologic Carbon Sequestration

Research Interests

1. Multiphase Flow through Porous Media 2. Reservoir Engineering 3. Colloids and Interfaces 4. Computational and Experimental Fluid Dynamics 5. Lubricants and Oils, Tribology 6. Supercritical Fluids 7. Microfluidics 8. Nano-materials 9. Carbon Neutral Manufacturing 10. Renewable Energy 11. Energy Efficiency

Current Position

2013.3–Present **NCGC Postdoc Fellow**, Energy Frontier Research Center, Energy Geosciences Division, U.S. Department of Energy Lawrence Berkeley National Laboratory

Education

- 2009.6–2013.1 **Ph.D. in Civil and Environmental Engineering** GPA: 4.0/4.0, Top 1
University of Virginia, Charlottesville, USA
- 2007.8–2009.5 **M.E. in Civil and Environmental Engineering** GPA: 4.03/4.0 (A⁺=4.33), Top 1
University of Virginia, Charlottesville, USA
- 2003.9–2007.6 **B.S. in Environmental/Chemical Engineering** GPA: 3.86/4.0, Top 5%
Minor. in English GPA: 3.88/4.0
Dalian University of Technology, China

Research and Teaching Experiences

Research

- 2013.3–Present **NCGC Postdoc Fellow**, Energy Frontier Research Center, Energy Geosciences Division, Lawrence Berkeley National Laboratory
- 8 Peer-Reviewed Journal Articles (2 Published, 6 in Review/Preparation), 2 Awards
- 2009.6–2013.1 **Ph.D. Researcher**, Virginia Environmentally Sustainable Technologies Laboratory, Department of Civil and Environmental Engineering, University of Virginia
- 12 Peer-Reviewed Journal Articles and Conference Papers, 6 Awards
- 2007.8–2009.5 **Graduate Researcher**, Virginia Environmentally Sustainable Technologies Laboratory, Department of Civil and Environmental Engineering, University of Virginia
- 1 Patent, 1 Award
- 2005.9–2007.6 **Undergraduate Researcher**, Key Laboratory of Industrial Ecology and Environmental Engineering, Chinese Ministry of Education, Dalian University of Technology
- 1 Peer-Reviewed Journal Article, 7 Awards

Teaching

- 2009.9–2010.1 **Ph.D. Instructor**, Department of Civil and Environmental Engineering, University of Virginia
- Class of “CE 6220: Water Chemistry for Environmental Engineers”
 - Only Winner of Annual Graduate Teaching Award in the Department
 - Nominee of All-University Graduate Teaching Award
- 2007.9–2008.1 **Graduate Teaching Assistant**, Department of Civil and Environmental Engineering, University of Virginia
- Class of “CE 6720: Continuum Mechanics”

Professional Certificates

- 2014.6 **Reservoir Geomechanics Certificate** Stanford University
- 2012.4 **Engineer in Training Certificate** NCEES

Software Skills

MATLAB, ABAQUS, C, LabVIEW, COMSOL, Crystal Ball, PHREEQC II, Visual MINTEQ, AspenPlus, Simapro, Microsoft Office Suite, Adobe Acrobat Suite, ImageJ

Computational Skills

Finite Element Analysis, Finite Difference Analysis, Proficient in most Commonly Used Numerical Methods

Publications

Ph.D. Dissertation

- 2013.1 **Shibo Wang**. “The Role of Interfacial Phenomena in Leakage from Geologic Carbon Sequestration Sites”. University of Virginia
- o Ph.D. Committee: Andres F. Clarens (Advisor), Catherine A. Peters (Princeton University), James A. Smith (Chair), Roseanne M. Ford, Teresa B. Culver

Peer-Reviewed Journal Articles

8. **Shibo Wang**, and Tetsu K. Tokunaga (2015). “Capillary Pressure–Saturation Relations for Supercritical CO₂ and Brine in Limestone/Dolomite Sands: Implications for Geologic Carbon Sequestration in Carbonate Reservoirs”. *Environmental Science and Technology*, 49 (12), 7208–7217.
 - o ACS Editors’ Choice Award
7. **Shibo Wang**, Zhiyuan Tao, Sara M. Persily, and Andres F. Clarens (2013). “CO₂ Adhesion on Hydrated Mineral Surfaces”. *Environmental Science and Technology*, 47 (20), 11858–11865.
6. **Shibo Wang**, and Andres F. Clarens (2013). “Analytical Model of Metalworking Fluid Penetration into the Flank Contact Zone in Orthogonal Cutting”. *Journal of Manufacturing Processes*, 15 (1), 41-50.
5. Yiwen Ouyang, **Shibo Wang**, Jingyi Li, Paul S. Riehl, Matthew R. Begley, and James P. Landers (2013). “Rapid Patterning of ‘Tunable’ Hydrophobic Valves on Disposable Microchips by Laser Printer Lithography”. *Lab on a Chip*, 13 (9), 1762-1771.
4. **Shibo Wang**, Ian M. Edwards, and Andres F. Clarens (2012). “Wettability Phenomena at the CO₂–Brine–Mineral Interface: Implications for Geologic Carbon Sequestration”. *Environmental Science and Technology*, 47 (1), 234-241.
3. **Shibo Wang**, and Andres F. Clarens (2012). “The Effects of CO₂–Brine Rheology on Leakage Processes in Geologic Carbon Sequestration”. *Water Resources Research*, 48 (8), W08518.
2. Andres F. Clarens, Amir Younan, **Shibo Wang**, and Paul E. Allaire (2010). “Feasibility of Gas-Expanded Lubricants for Increased Energy Efficiency in Tilting-Pad Journal Bearings”. *Journal of Tribology*, 132 (3), 031802.
1. Yanhe Han, Xie Quan, Shuo Chen, **Shibo Wang**, and Yaobin Zhang (2007). “Electrochemical Enhancement of Adsorption Capacity of Activated Carbon Fibers and Their Surface Physicochemical Characterizations”. *Electrochimica Acta*, 52 (9), 3075-3081.

Journal Articles in Review/Preparation

6. Jiamin Wan, Yongman Kim, Tetsu K. Tokunaga, **Shibo Wang**, Maria V.P. Altoe, Paul D. Ashby, and Donald J. DePaolo. “Reactivity of Supercritical CO₂ with Muscovite”. *Nature Geoscience*, In Review.
5. **Shibo Wang**, and Tetsu K. Tokunaga. “Changes in Interfacial and Wettability after Long-Term Incubation of Geological Materials in Supercritical CO₂ and Brine”. to be submitted to *Environmental Science and Technology*.
4. Tetsu K. Tokunaga, **Shibo Wang**, Jiamin Wan, Yongman Kim and Wenming Dong. “Surface Chemistry Changes due to Extended CO₂ Exposure: An Integrated Study”. to be submitted to *Environmental Science and Technology*.
3. Abdullah Cihan, **Shibo Wang**, Tetsu K. Tokunaga, and Jens Birkholzer. “An Integrated Experimental and Modeling Study on Immiscible Gravity Exchange Flow”. to be submitted to *Water Resources Research*.
2. **Shibo Wang**, Ian C. Bourg, Yangyang Liu, Tetsu K. Tokunaga, and Andres F. Clarens. “Wettability in CO₂ Sequestration: A Combined Experimental and Molecular Dynamic Modeling Study”. to be submitted *Proceedings of the National Academy of Sciences*.
1. **Shibo Wang**, and Tetsu K. Tokunaga. “Capillary Pressure–Saturation Relations and Residual Saturation of Oil, CO₂ and Air in Sandstone and Carbonates”. to be submitted to *Transport in Porous Media*.

Conference Proceedings

6. **Shibo Wang**, and Andres F. Clarens. “Improved Force Balance for Predicting Vertical Migration of CO₂ from Geologic Sequestration Sites”. In *American Institute of Chemical Engineers Carbon Management Technology Conference*, February 7-9, 2012, Orlando, Florida.
5. Yiwen Ouyang, Jingyi Li, Christopher Phaneuf, **Shibo Wang**, Paul S. Riehl, and James P. Landers. “Design and Fabrication of a CD-like Disposable Microfluidic Platform for Serial Dilution”. In *The 16th International Conference on Miniaturized System for Chemistry and Life Science*, October 28–November 1, 2012, Okinawa, Japan.
4. Andres F. Clarens, **Shibo Wang**, Amir Younan, and Paul E. Allaire. “Feasibility of Gas-Expanded Lubricants for Increased Energy Efficiency in Rotating Machinery”. In *Society of Tribologists and Lubrication Engineers/American Society of Mechanical Engineers International Joint Tribology Conference*, October, 2010, San Francisco, California.
3. **Shibo Wang**, and Andres F. Clarens. “Analytical Model of Metalworking Fluid Penetration into the Flank Contact Zone in Orthogonal Cutting”. In *Society of Tribologists and Lubrication Engineers/American Society of Mechanical Engineers International Joint Tribology Conference*, October, 2010, San Francisco, California.
2. Karla H. Sharrer, **Shibo Wang**, Brian K. Weaver, and Andres F. Clarens. “Research Experience for Teachers: Evaluating CO₂ Leakage from Sequestration Sites Using Column

Studies”. In *University of Virginia RET Research Symposium*, Charlottesville, Virginia, July, 2010.

1. **Shibo Wang**, and Andres F. Clarens. “Feasibility of Gas-Expanded Lubricants for Increased Energy Efficiency in Power Turbines”. In *239th American Chemical Society National Meeting and Exposition*, March 21-25, 2010, San Francisco, California.

Session Proposals

3. **Shibo Wang**, Lauren E. Beckingham, Megan M. Smith, and Charles J. Werth. “New Perspectives on CO₂ Flow, Transport, and Long-Term Storage in Subsurface Reservoirs”. In *American Geophysical Union Fall Meeting*, San Francisco, California, December, 2015.
2. **Shibo Wang**, and Lauren E. Beckingham. “New Perspectives on Hydrological and Geochemical Processes pertaining to Geologic CO₂ Storage”. In *American Geophysical Union Fall Meeting*, San Francisco, California, December, 2015.
1. Stuart D. Walsh, Susan A. Carroll, Megan M. Smith, and **Shibo Wang**. “Coupled Hydraulic, Geochemical, and Geomechanical Processes in Carbon Storage”. In *American Geophysical Union Fall Meeting*, San Francisco, California, December, 2014.

Patents

2011/2012 **Gas-Expanded Lubricants for Increased Energy Efficiency and Related Method and System**. 2009 Priority

- o Inventors: Andres F. Clarens, Paul E. Allaire, Amir Younan, Shibo Wang
- o License Number: WO2011047285 A1 (International); US20120199421 A1 (U.S.)
EP2488614 A1 (European)

Honors and Awards

- 2015 **ACS Editors’ Choice Award** American Chemical Society
 - o Selected Based on Recommendations from 400+ Editors of ACS’ 44 Peer-Reviewed Journals
 - o <1% Selection Rate among all ACS Published Papers
- 2013 **Annual Award for Excellence in Research** Dept. of CEE, UVa
 - o Only Winner
- 2013 **Chinese Government Scholarship for Outstanding Self-Financed Student**
China Scholarship Council
 - o Global Selection among all Chinese Ph.D. Scholars Overseas (Top 1%)
- 2012 **Huskey Award for Outstanding Research – “Two-Hoos” Team Research**
UVa (Shared with Ian M. Edwards)

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- 2012 **Travel Grant Award** Dept. of CEE, UVa
- 2011 **Travel Grant Award** American Geophysical Union
- 2011 **Annual Graduate Teaching Award** Dept. of CEE, UVa
- Only Winner
- 2010 **Graduate Student Award** Division of Environmental Chemistry, ACS
- #1 Ranking among 25 Awardees Selected from all American Universities
- 2009 **ConocoPhillips–Penn State Energy Prize, First Runner Up** ConocoPhillips
(Shared with Andres Clarens and Brian Tison)
- 2007 **Distinguished Bachelor Award** DUT
- 2007 **Outstanding Bachelor Thesis Award** DUT
- 2007 **“A” Level for Students’ Research Ability** DUT
- 2006 **Exchange Honor Student with Scholarship** University of Kitakyushu, Japan
- 2004–2007 **Outstanding Student Scholarships** DUT

Research Projects

2013.3–Present **Lawrence Berkeley National Laboratory, Berkeley, California**

Reservoir Processes and Engineering

- Effects of Natural Organic Matters on Reservoir Capillarity and Wettability
- Mechanisms of Immiscible Gravity Exchange Flow: Experiments and Modeling
- Investigation of Capillary Pressure–Saturation Relations of Oil and Brine for Sandstone and Carbonate Reservoirs
- Investigation of Capillary Pressure–Saturation Relations of Supercritical CO₂ and Brine for Sandstone and Carbonate Reservoirs
- Surfactant and CO₂ flooding in Quartz and Limestone Sandpacks
- Improved Mobility Control and Sweep Efficiency with CO₂/CO₂–Foam in Enhanced Oil Recovery
- Oil/CO₂/Brine Displacement, Pore Flow Dynamics (e.g., Snap-Off, Haines Jumps, Interface Evolution)
- Visualization of In-Situ Multiphase Flow of CO₂/CO₂–Foam in Microfluidic Pore Model
- Reactivity of Supercritical CO₂ with Mica Minerals
- Investigation of Proppant Transport Efficiency and Fluid Leak-Off in Hydraulic Fracturing
- In-Depth Exploration of Reservoir Wettability Mechanisms and their Impacts on Pore

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and Darcy Flow

- Utilization of Capillary Scaling to Predict Wettability and Interfacial Tension
- Improvement of Pore to Reservoir/Basin Upscaling

2007.9-2013.1 **University of Virginia**, Charlottesville, Virginia

Reservoir Characterization and Engineering

- Pore-Scale Modeling of CO₂ Transport Velocity in Different Reservoirs
- Characterization of Reservoir Rock, Fluid and Interfacial Properties (e.g., Wettability, Adhesion) with Supercritical CO₂ and N₂
- Investigation of Reservoir Fluid Properties (e.g., Viscosity, Rheology) of CO₂-Brine Mixtures for Mobility Control
- Modeling of Multiphase Flow through Porous Media under Enhanced Oil Recovery/CO₂ Sequestration Reservoir Conditions; Evaluation of Roles of Important Geophysical, Geochemical and Operational Parameters
- Porous Media Column Study via Electrical Resistivity to Study Pore-Scale CO₂-Brine Transport, Distribution and Dissolution
- Pore-to-Reservoir Upscaling Methods

Carbon Neutral Manufacturing, Renewable Energy, Lubrication/Tribology

- Invention of CO₂-Based Property Adjustable Lubricants with a 20% Increase in Energy Efficiency in Wind Turbine
- Determination of the Viscosity, Tribology and Thermoelastichydrodynamic Properties of the Invented Lubricants
- Modeling of Fluid Dynamics of Lubricants (e.g., Emulsion, CO₂, N₂, Polymer, CO₂-Polymer); Evaluated Tribology and Heat Transfer in Advanced Manufacturing Processes Using Finite Element/Difference (FEA/FDA) Methods

Microfluidic Flow Control

- Design and Fabrication of Disposable Microfluidic Device by Laser Printer Lithography

Hydrology and Watershed Modeling

- Fate and Transport Modeling of Estrogen Pollutants in Chesapeake Watershed

2006.4-2007.6 **Dalian University of Technology**, Dalian, China

Environmental and Chemical Engineering

- Fabrication of Orderly Semiconductor Nitrogen, Potassium Doped TiO₂ Nanotube and its Environmental Application in Degradation of Persistent Organic Pollutants

- Electrochemical Adsorption Capacity of Activated Carbon Fibers and their Surface Physicochemical Characterizations
- Construction of an Integrated Database on Waste Water Treatment Plants in China
- Design of Environmentally Friendly Lunchbox Using Life Cycle Impact Analysis
- Uptake of Atmospheric PAHs by Leaves

Professional Services

Journal Reviewer

17. Journal of Colloid and Interface Science
16. Royal Society of Chemistry Advances
15. Journal of Earth System Science
14. Geophysical Research Letters
13. Lab on a Chip
12. Advances in Water Resources
11. International Journal of Greenhouse Gas Control
10. Water Resources Research
9. Environmental Earth Sciences
8. Environmental Progress and Sustainable Energy
7. Geophysics
6. Journal of Canadian Petroleum Technology
5. Desalination
4. Journal of Water and Climate Change
3. Energies
2. SPE Reservoir Evaluation & Engineering – Formation Evaluation
1. Environmental Science and Technology

Convener and Chair

- 2015.12 **Primary Convener**, Session “H077A: New Perspectives on CO₂ Flow, Transport, and Long-Term Storage in Subsurface Reservoirs I” In *American Geophysical Union Fall Meeting*, San Francisco, California, December, 2015.
- 2015.12 **Primary Convener**, Session “H077B: New Perspectives on CO₂ Flow, Transport, and Long-Term Storage in Subsurface Reservoirs II” In *American Geophysical Union Fall Meeting*, San Francisco, California, December, 2015.
- 2015.12 **Primary Convener and Co-Chair**, Session “H077C: New Perspectives on CO₂ Flow,

- Transport, and Long-Term Storage in Subsurface Reservoirs Posters” In *American Geophysical Union Fall Meeting*, San Francisco, California, December, 2015.
- 2014.12 **Convener and Co-Chair**, Session “H11K: Coupled Hydraulic, Geochemical, and Geomechanical Processes in Carbon Storage I” In *American Geophysical Union Fall Meeting*, San Francisco, California, December, 2014.
- 2014.12 **Convener and Co-Chair**, Session “H12B: Coupled Hydraulic, Geochemical, and Geomechanical Processes in Carbon Storage II” In *American Geophysical Union Fall Meeting*, San Francisco, California, December, 2014.
- 2014.12 **Convener and Co-Chair**, Session “H23O: Coupled Hydraulic, Geochemical, and Geomechanical Processes in Carbon Storage IV” In *American Geophysical Union Fall Meeting*, San Francisco, California, December, 2014.
- 2014.12 **Convener and Co-Chair**, Session “H24A: Coupled Hydraulic, Geochemical, and Geomechanical Processes in Carbon Storage V” In *American Geophysical Union Fall Meeting*, San Francisco, California, December, 2014.

Abstracts and Presentations

Invited Talks

2. **Shibo Wang**. “Capillary Pressure–Saturation Relations for Supercritical CO₂ and Brine in Limestone/Dolomite Sands: Implications for Geologic Carbon Sequestration in Carbonate Reservoirs”. In *Geologic Carbon Sequestration Program Meeting*, Earth Sciences Division, Lawrence Berkeley National Laboratory, August, 2015, Berkeley, California.
1. **Shibo Wang**. “Investigation of Interfacial Phenomena: Capillary Pressure–Saturation Relations, Rheology, Wettability and CO₂ Adhesion for Geologic Carbon Sequestration”. In *Energy Frontier Research Center Junior Scientist Meeting*, Earth Sciences Division, Lawrence Berkeley National Laboratory, April, 2014, Berkeley, California.

Keynote Talks

1. **Shibo Wang**, Xuehua Li, Xiaojia Mu, Tingting Zhang, Sihan Sun and Yiwen Liu. “Life Cycle Impact Analysis of Disposable Lunchbox and Its Alternatives”. In *International Specialized Environmental Issues Conference*, July, 2006, Kitakyushu, Japan.

Conference Talks

32. Jiamin Wan, Yongman Kim, Tetsu K. Tokunaga, **Shibo Wang**, Maria V.P. Altoe, Paul D. Ashby, and Donald J. DePaolo. “Reactivity of Dissolved- vs. Supercritical-CO₂ Phase toward Muscovite Basal Surfaces”. In *American Geophysical Union Fall Meeting*, San Francisco, California, December, 2015.
31. Tetsu K. Tokunaga, and **Shibo Wang**. “Capillary and Wettability Controls on CO₂–brine Distributions in Geologic Carbon Sequestration”. In *Center for Nanoscale Control of Geologic*

CO₂ All-Hands Meeting, Lawrence Berkeley National Laboratory, Berkeley, California, November, 2015.

30. Jiamin Wan, Yongman Kim, Tetsu K. Tokunaga, **Shibo Wang**, Maria V.P. Altoe, Paul D. Ashby, and Donald J. DePaolo. “Reactivity of Dissolved- vs. Supercritical-CO₂ Phase toward Muscovite Basal Surfaces”. In *Center for Nanoscale Control of Geologic CO₂ All-Hands Meeting*, Lawrence Berkeley National Laboratory, Berkeley, California, November, 2015.
29. **Shibo Wang**, Tetsu K. Tokunaga, and Jiamin Wan. “Capillary Pressure–Saturation Relations and Residual Saturation of CO₂, Oil, and Air in Quartz and Limestone Sandpacks”. In *12th International Symposium on Reservoir Wettability and its Effects on Oil Recovery*, Lawrence, Kansas, October, 2015.
28. **Shibo Wang**, Tetsu K. Tokunaga, and Jiamin Wan. “Capillary Pressure–Saturation Relations for Supercritical CO₂ and Brine in Limestone/Dolomite Sands: Implications for Geologic Carbon Sequestration in Carbonate Reservoirs”. In *250th American Chemical Society National Meeting and Exposition*, Boston, Massachusetts, August, 2015.
27. Tetsu K. Tokunaga, **Shibo Wang**, Jiamin Wan, and Yongman Kim. “Why Do Some scCO₂–Brine Saturation Relations Deviate from Capillary Scaling Predictions?”. In *Center for Nanoscale Control of Geologic CO₂ Pore-scale Multiphase Workshop*, Stanford University, Stanford, California, August, 2015.
26. Tetsu K. Tokunaga, and **Shibo Wang**. “Thrust 2, Residual/Capillary Trapping Updates”. In *Center for Nanoscale Control of Geologic CO₂ PI Telecon*, Lawrence Berkeley National Laboratory, Berkeley, California, July, 2015.
25. **Shibo Wang**, Tetsu K. Tokunaga, and Jiamin Wan. “Capillary Pressure–Saturation Relations for Supercritical CO₂ and Brine in Limestone/Dolomite Sands: Implications for Geologic Carbon Sequestration in Carbonate Reservoirs”. Pop-Up Presentation in *Gordon Research Conference on Carbon Capture, Utilization and Storage*, Easton, Massachusetts, June, 2015.
24. Tetsu K. Tokunaga, and **Shibo Wang**. “Capillary Pressure–Saturation Relations for Supercritical CO₂ in Carbonate Reservoirs”. In *Center for Nanoscale Control of Geologic CO₂ PI Telecon*, Lawrence Berkeley National Laboratory, Berkeley, California, May, 2015.
23. Tetsu K. Tokunaga, **Shibo Wang**, and Jiamin Wan. “Capillary Controls on CO₂–Brine Distributions in Porous Media”. In *Center for Nanoscale Control of Geologic CO₂ Dynamic Wetting Workshop*, Lawrence Berkeley National Laboratory, Berkeley, California, April, 2015.
22. **Shibo Wang**, Tetsu K. Tokunaga, Jiamin Wan, Wenming Dong, and Yongman Kim. “Capillary Pressure–Saturation Relations for Supercritical CO₂ and Brine: Implications for Capillary/Residual Trapping in Carbonate Reservoirs during Geologic Carbon Sequestration”. In *American Geophysical Union Fall Meeting*, San Francisco, California, December, 2014.

21. **Shibo Wang**, Tetsu K. Tokunaga, Jiamin Wan, Wenming Dong, and Yongman Kim. “Capillary Pressure–Saturation Relations and Residual Saturation of CO₂, Oil, and Air in Quartz and Limestone Sandpacks”. Pop-Up Presentation In *Center for Nanoscale Control of Geologic CO₂ Fall Symposium*, Lawrence Berkeley National Laboratory, Berkeley, California, November, 2014.
20. Tetsu K. Tokunaga, **Shibo Wang**, Jiamin Wan, Wenming Dong, and Yongman Kim. “Capillary Pressure and CO₂ Trapping in Carbonate Sands”. In *Center for Nanoscale Control of Geologic CO₂ Fall Symposium*, Lawrence Berkeley National Laboratory, Berkeley, California, November, 2014.
19. Jiamin Wan, Tetsu K. Tokunaga, Yongman Kim, and **Shibo Wang**. “Contact Angle Measurement Ambiguity in Supercritical CO₂–Water–Mineral Systems”. In *Center for Nanoscale Control of Geologic CO₂ Fall Symposium*, Lawrence Berkeley National Laboratory, Berkeley, California, November, 2014.
18. Tetsu K. Tokunaga, **Shibo Wang**, Jiamin Wan, Yongman Kim, and Wenming Dong. “Proposed Plans for P_c(S) Relations in Reservoir Materials”. In *Thrust 2: Secondary Trapping Meet-Up*. Stanford University, Palo Alto, California, October, 2014.
17. **Shibo Wang**, Andres F. Clarens, Zhiyuan Tao, and Sara M. Persily. “Adhesion of CO₂ on Hydrated Mineral Surfaces and Its Implications to Geologic Carbon Sequestration”. In *American Geophysical Union Fall Meeting*, San Francisco, California, December, 2013.
16. Tetsu K. Tokunaga, and **Shibo Wang**. “Capillary Pressure and Mineral Wettability Influences on Reservoir CO₂ Capacity”. In *Mineralogical Society of America and Geochemical Society Short Course on Geochemistry of Geologic CO₂ Sequestration*. Lawrence Berkeley National Laboratory, Berkeley, California, December, 2013.
15. **Shibo Wang**, Tetsu K. Tokunaga, Jiamin Wan, Jong-Won Jung, Tae-Wook Kim, Yongman Kim, Wenming Dong, Andres F. Clarens, Zhiyuan Tao, and Sara M. Persily. “Investigation of Interfacial Phenomena: Capillary Pressure–Saturation Relations, CO₂ Adhesion and Wettability Hysteresis for Geologic Carbon Sequestration”. In *Center for Nanoscale Control of Geologic CO₂ Fall Symposium*, Lawrence Berkeley National Laboratory, Berkeley, California, November, 2013.
14. Jiamin Wan, Yongman Kim, Prem Bikina, Tetsu K. Tokunaga, and **Shibo Wang**. “Wetting Behavior of Supercritical CO₂ and Brine on Mica Surfaces and in Silica Pore Networks”. In *Center for Nanoscale Control of Geologic CO₂ Fall Symposium*, Lawrence Berkeley National Laboratory, Berkeley, California, November, 2013.
13. Andres F. Clarens, and **Shibo Wang**. “CO₂ Adhesion at the Hydrated Mineral Interface Could Greatly Reduce the Risk of Leakage from Geologic Carbon Sequestration Sites”. In *American Institute of Chemical Engineers Carbon Management Technology Conference*, Alexandria, Virginia, October, 2013.
12. Tetsu K. Tokunaga, Jiamin Wan, Jong-won Jung, Tae-Wook Kim, Yongman Kim,

- Wenming Dong, and **Shibo Wang**. “Capillary Pressure Relations with Brine Saturations under Geologic Carbon Sequestration Conditions”. In *Clay Minerals Society Annual Meeting*, University of Illinois, Urbana-Champaign, Illinois, October, 2013.
11. Tetsu K. Tokunaga, Jiamin Wan, Jongwon Jung, TaeWook Kim, Yongman Kim, Wenming Dong, and **Shibo Wang**. “Testing Predictability of Capillary Pressure–Saturation Relations for Geological CO₂ Sequestration”. In *Center for Nanoscale Control of Geologic CO₂ Seminar*, Lawrence Berkeley National Laboratory, Berkeley, California, July, 2013.
 10. **Shibo Wang**. “The Role of Interfacial Phenomena in Leakage from Geologic Carbon Sequestration Sites”. Doctor of Philosophy Degree Oral Defense, University of Virginia, Charlottesville, Virginia, February, 2013.
 9. Andres F. Clarens, **Shibo Wang**, Bo Liang, Catherine A. Peters, Jeffrey P. Fitts, Hang Deng, and Brian R. Ellis. “An Integrated Experimental Program to Understanding Leakage from Geologic Carbon Sequestration Sites across Scales”. In *American Geophysical Union Fall Meeting*, San Francisco, California, December, 2012.
 8. **Shibo Wang**, and Ian M. Edwards. “CO₂ Wetting on Representative Minerals and Its Implications for Geologic Carbon Sequestration”. In *Robert J. Huskey Research Exhibition, Two Hoos Presentation Session*, Graduate School of Arts and Sciences, University of Virginia, Charlottesville, Virginia, March, 2012.
 7. **Shibo Wang**, and Andres F. Clarens. “CO₂–Brine Rheology Could Suppress Leakage from Geologic Carbon Sequestration Sites”. In *American Geophysical Union Fall Meeting*, San Francisco, California, December, 2011.
 6. Catherine A. Peters, Andres F. Clarens, Jeffrey P. Fitts, Brian R. Ellis, **Shibo Wang**, Curtis M. Oldenburg, Patrick F. Dobson, Joseph S.Y. Wang, and Yves Guglielmi. “Safe and Effective Geologic Sequestration of CO₂: Multi-Scale Experimental Studies of Formation Integrity and Leakage”. In *Association of Environmental Engineering and Science Professors Biannual Meeting*, Tampa, Florida, July, 2011.
 5. Andres F. Clarens, **Shibo Wang**, Amir Younan, and Paul E. Allaire. “Feasibility of Gas-Expanded Lubricants for Increased Energy Efficiency in Rotating Machinery”. In *Society of Tribologists and Lubrication Engineers/ American Society of Mechanical Engineers International Joint Tribology Conference*, October, 2010, San Francisco, California.
 4. Andres F. Clarens, and **Shibo Wang**. “Modeling Metalworking Fluid Penetration into the Cutting Zone to Describe the Behavior of Environmentally Adapted Lubricants”. In *Society of Tribologists and Lubrication Engineers/ American Society of Mechanical Engineers International Joint Tribology Conference*, October, 2010, San Francisco, California.
 3. **Shibo Wang**, and Andres F. Clarens. “Rheology of CO₂-Saturated Brine Solutions: Implications for Fluid Flow under Geologic Storage Relevant Conditions”. In *National Energy Technology Laboratory Carbon Capture and Sequestration Meeting*, May, 2010, Pittsburgh, Pennsylvania.

2. **Shibo Wang**, and Andres F. Clarens. “Feasibility of Gas-Expanded Lubricants for Increased Energy Efficiency in Power Turbines”. In *239th American Chemical Society National Meeting and Exposition*, March, 2010, San Francisco, California.
1. **Shibo Wang**, and Andres F. Clarens. “Rheology of CO₂–H₂O Mixtures: Implications for Understanding Leakage in Geologic Sequestration”. In *239th American Chemical Society National Meeting and Exposition*, March, 2010, San Francisco, California.

Poster Presentations

16. **Shibo Wang**, Tetsu K. Tokunaga, Jiamin Wan, Yongman Kim, and Timothy J. Kneafsey. “Capillary and Wettability Controls on CO₂–brine Distributions in Geologic Carbon Sequestration”. In *U.S. Department of Energy EFRC Principal Investigators’ Meeting*, Washington D.C., October, 2015.
15. Timothy J. Kneafsey, **Shibo Wang**, Tetsu K. Tokunaga, Jiamin Wan, Jonathan B. Ajo-Franklin, Marco Voltolini, and David Trebotich. “Effects of Wettability on CO₂ Behavior in Mineral Media”. In *U.S. Department of Energy Carbon Storage R&D Project Review Meeting: Transforming Technology through Integration and Collaboration*, National Energy Technology Laboratory, Pittsburgh, Pennsylvania, August, 2015.
14. **Shibo Wang**, Tetsu K. Tokunaga, Jiamin Wan. “Capillary Pressure – Saturation Relations for Supercritical CO₂ and Brine in Limestone/Dolomite Sands: Implications for Geologic Carbon Sequestration in Carbonate Reservoirs”. In *Gordon Research Conference on Carbon Capture, Utilization and Storage*, Easton, Massachusetts, June, 2015.
13. **Shibo Wang**, Tetsu K. Tokunaga, Jiamin Wan, Wenming Dong, and Yongman Kim. “Capillary Pressure–Saturation Relations and Residual Saturation of CO₂, Oil, and Air in Quartz and Limestone Sandpacks”. In *Center for Nanoscale Control of Geologic CO₂ Fall Symposium*, Lawrence Berkeley National Laboratory, Berkeley, California, November, 2014.
12. Tetsu K. Tokunaga, Jiamin Wan, Yongman Kim, Tae-Wook Kim, **Shibo Wang**, Antonio G. Lanzirotti, Matthew G. Newville, Stephen R. Sutton, W. Rao, and Sue Wirick. “Controlling and Measuring Water Potentials and Water Film Thickness on Mineral Surfaces”. In *“Geosciences Models – Where are the Rocks?” the Annual Symposium for the Geosciences Research Program within the Department of Energy’s Office of Basic Energy Sciences*, Gaithersburg, Maryland, May, 2014.
11. **Shibo Wang**, and Andres F. Clarens. “Adhesion and Its Role in Geologic Carbon Sequestration”. In *12th Carbon Capture, Utilization and Sequestration Conference*, Pittsburgh, Pennsylvania, May, 2013.
10. Yiwen Ouyang, Jingyi Li, Christopher Phaneuf, **Shibo Wang**, Paul S. Riehl, and James P. Landers. “Design and Fabrication of a CD-like Disposable Microfluidic Platform for Serial Dilution”. In *16th International Conference on Miniaturized System for Chemistry and Life Science*, October–November, 2012, Okinawa, Japan.

9. **Shibo Wang**, and Andres F. Clarens. “Wettability Phenomena of Representative Minerals in Geologic Carbon Sequestration Formations”. In *11th Carbon Capture, Utilization and Sequestration Conference*, Pittsburgh, Pennsylvania, May, 2012.
8. **Shibo Wang**. “The Role of Interfacial Phenomena in Leakage from Geologic Carbon Sequestration Sites”. In *2nd Presidential Poster Competition*, University of Virginia, Charlottesville, Virginia, April, 2012.
7. **Shibo Wang**, and Andres F. Clarens. “Improved Force Balance for Predicting Vertical Migration of CO₂ from Geologic Sequestration Sites”. In *American Institute of Chemical Engineers Carbon Management Technology Conference*, Orlando, Florida, February, 2012.
6. **Shibo Wang**, Ian M. Edwards, and Andres F. Clarens. “The Wettability of CO₂ on Minerals under Relevant Geologic Carbon Sequestration Conditions and Its Implications on Leakage Processes”. In *American Geophysical Union Fall Meeting*, San Francisco, California, December, 2011.
5. Ian M. Edwards, **Shibo Wang**, and Andres F. Clarens. “Contact Angle Measurements for Assessing the Wettability of CO₂ in A Saline–Rock/Clay System: Implications for Geologic Carbon Sequestration”. In *University of Virginia REU Research Symposium*, Charlottesville, Virginia, July, 2011.
4. Brandon C. Lee, **Shibo Wang**, Brian K. Weaver and Andres F. Clarens. “Evaluating CO₂ Leakage from Sequestration Sites Using Column Studies”. In *University of Virginia RET Research Symposium*, Charlottesville, Virginia, July, 2011.
3. Karla H. Sharrer, **Shibo Wang**, Brian K. Weaver, and Andres F. Clarens. “Research Experience for Teachers: Evaluating CO₂ Leakage from Sequestration Sites Using Column Studies”. In *University of Virginia RET Research Symposium*, Charlottesville, Virginia, July, 2010.
2. **Shibo Wang**, and Andres F. Clarens. “Rheology of CO₂-Saturated Brine Solutions: Implications for Fluid Flow under Geologic Storage Relevant Conditions”. In *National Energy Technology Laboratory Carbon Capture and Sequestration Meeting*, Pittsburgh, Pennsylvania, May, 2010.
1. **Shibo Wang**, and Chenxi Li. “Effects of pH, Extraction Time, and Soil Types on Heavy Metal Extractability”. In *Environmental Microbiology Class Poster Competition*, University of Virginia, Charlottesville, Virginia, April, 2009.

Workshops and Panel Discussions

13. *Center for Nanoscale Control of Geologic CO₂ Meeting*, Stanford University, Palo Alto, California, August, 2015.
12. *Center for Nanoscale Control of Geologic CO₂ Principle Investigator Telecon*, Lawrence Berkeley National Laboratory, Berkeley, California, July, 2015.
11. *Center for Nanoscale Control of Geologic CO₂ Principle Investigator Telecon*, Lawrence Berkeley

- National Laboratory, Berkeley, California, May, 2015.
10. *Center for Nanoscale Control of Geologic CO₂ Dynamic Wetting Workshop*, Lawrence Berkeley National Laboratory, Berkeley, California, April, 2015.
 9. *Center for Nanoscale Control of Geologic CO₂ Scenarios Workshop*, Lawrence Berkeley National Laboratory, Berkeley, California, February, 2015.
 8. *Research Showcase for Stanford University's Class "Reservoir Wettability and Contact Angle"*, Lawrence Berkeley National Laboratory, Berkeley, California, February, 2015.
 7. *Thrust Area 2: Secondary Trapping. In Center for Nanoscale Control of Geologic CO₂ Fall Symposium*, Lawrence Berkeley National Laboratory, Berkeley, California, November, 2014.
 6. *Collaborative Research Meeting with Dr. Sally Benson's and Dr. Hamdi Tchelepi's Groups from Stanford University*, Lawrence Berkeley National Laboratory, Berkeley, California, November, 2014.
 5. *Thrust 2: Secondary Trapping Meet-Up*. Stanford University, Palo Alto, California, October, 2014.
 4. *Mineralogical Society of America and Geochemical Society Short Course on Geochemistry of Geologic CO₂ Sequestration*. Lawrence Berkeley National Laboratory, Berkeley, California, December, 2013.
 3. *Thrust Area 2: Reservoir Processes. In Center for Nanoscale Control of Geologic CO₂ Fall Symposium*, Lawrence Berkeley National Laboratory, Berkeley, California, November, 2013.
 2. *Society of Exploration Geophysicist International Exposition and 83rd Annual Meeting*. Houston, Texas, September, 2013.
 1. *Inter-University Student Initiative in Carbon Sequestration Fall Meeting*, Princeton University, Princeton, New Jersey, November, 2011.

Professional Affiliations and Activities

Membership

2015-Present	International Society for Porous Media (InterPore)
2015-Present	Young Professionals in Energy (YPE)
2014-Present	Stanford Energy Club (SEC)
2014-Present	Berkeley Energy and Resources Collaborative (BERC)
2012-Present	Society of Petroleum Engineers (SPE)
2011-Present	American Geophysical Union (AGU)
2013-2014	Society of Exploration Geophysicists (SEG)
2012-2013	Chinese American Petroleum Association (CAPA)
2007-2013	American Society of Civil Engineering (ASCE)

- 2008-2011, 15 American Chemical Society (ACS)
2007-2009 Virginia Water Environment Association/Water Environment Federation (VWEA/WEA)
2007-2009 American Water Works Association (AWWA)

Referee

- 2015.12 **Outstanding Student Paper Awards.** *American Geophysical Union Fall Meeting*, San Francisco, California, December, 2015.
2014.12 **Outstanding Student Paper Awards.** *American Geophysical Union Fall Meeting*, San Francisco, California, December, 2014.

Seminar Organizer and Host

- 2015.12 Darcy Lecture/Distinguished Scientist Seminar Featuring Dr. Rainer Helmig on “Evaluating the Competitive Use of the Subsurface: The Influence of Energy Storage and Production in Groundwater”, Lawrence Berkeley National Laboratory, Berkeley, California, December, 2015.
2015.4 Distinguished Scientist Seminar Featuring Dr. Michael Celia on “Leakage along Old Wells with Applications to CO₂ Sequestration and Methane Emissions”, Lawrence Berkeley National Laboratory, Berkeley, California, April, 2015.
2014.9 Distinguished Scientist Seminar Featuring Dr. Robert Enick on “Improving CO₂ Enhanced Oil Recovery with CO₂-soluble Additives, with Possible Application to CO₂ Sequestration”, Lawrence Berkeley National Laboratory, Berkeley, California, September, 2014.

Committee

- 2014.3-Present Distinguished Scientist Seminar Series Committee, Earth and Environmental Research Area, Lawrence Berkeley National Laboratory.
2011.4 University of Virginia Engineering Research Symposium, University of Virginia.
2010.7.-2011.7 Graduate Engineering Student Council (Vice President), University of Virginia.
2009-2010 Department Advisory Committee, CEE, University of Virginia.

Exhibitor

- 2014.12 Employee Representative of Earth Sciences Division, Lawrence Berkeley National Laboratory to Showcase Research, Network and Recruitment at *American Geophysical Union Fall Meeting*, San Francisco, California, December, 2014.
2013.12 Employee Representative of Earth Sciences Division, Lawrence Berkeley National Laboratory to Showcase Research, Network and Recruitment at *American Geophysical Union Fall Meeting*, San Francisco, California, December, 2013.

Mentorship

- 2014.6-Present **Lawrence Berkeley National Laboratory**, Berkeley, California
- Visiting Professor, Postdoc, and Ph.D. Students: Cong Chen, Ran Hu, Weijun Shen, Rong Li
- 2009.6-2013.1 **University of Virginia**, Charlottesville, Virginia
- Ph.D. Students: Bo Liang, Zhiyuan Tao, Brian Weaver
 - Undergraduate Students: Brian Tison, Ian Edwards, Sara Persily, Jasmine Copeland, Lauren Bolton, Simon Kobayashi, Christina Perry, Jack St. Marie
 - High School Teachers: Brandon Lee, Karla Sharrer, Deborah Putney

Media Coverage

- 2015.6 **“Capillary Pressure Saturation Relations for Supercritical CO₂ and Brine in Limestone/Dolomite Sands: Implications for Geologic Carbon Sequestration in Carbonate Reservoirs”**, US Department of Energy – Energy Frontier Research Centers Community Website
- 2015.6 **“Wang, Tokunaga Win ACS Editors' Choice Award”**, LBNL – Earth Sciences Division News and Events; ESD Twitter Webpage; ESD Facebook Webpage
- 2015.6 **“ACS Publications – Editors' Choice”**, American Chemical Society Website
- 2014.10 **“Introduction of Winner of Chinese Government Scholarship for Outstanding Self-Financed Student”**, China Scholars Abroad Magazine
- 2013.12 **“Lab Earth Scientists Present Talks at American Geophysical Union Meeting”**, Today at Berkeley Lab, LBNL Webpage
- 2013.4 **“2012 Chinese Government Scholarship for Outstanding Self-Financed Student”**, China Scholarship Council Webpage
- 2012.8 **“Underground Bubbles Could Help Keep Unwelcome Carbon Dioxide Out Of The Atmosphere”**, American Geophysical Union Blogosphere
- 2012.8 **“Patent Application Titled “Gas Expanded Lubricants For Increased Energy Efficiency and Related Method and System” Under Review”**, Vertical News
- 2012.6 **“Shibo Wang and Ian Edwards Place In The “Two Hoos” Oral Presentation Competition”**, CEE News, University of Virginia
- 2012.5 **“Gas Expanded Lubricants: Smart Fluids For Improving Efficiency of Wind Turbines”**, National Science Foundation Website
- 2011.4 **“WIPO Assigns Patent To University of Virginia Patent Foundation For “Gas-Expanded Lubricants For Increased Energy Efficiency And Related Method And System”**, American Inventors, HighBeam Research
- 2010.11 **“Generating a ‘Smart’ Solution For More-Efficient Energy Production”**, School of Engineering and Applied Science E-News Online, University of Virginia

- 2010.10 **“Generating a ‘Smart’ Solution For More-Efficient Energy Production”**, Patent Foundation Website, University of Virginia
- 2010.5 **“Gas-Expanded Lubricants”**, Tech Beat, Tribology and Lubrication Technology
- 2009.10 **“ConocoPhillips Energy Prize Winner Announced”**, Bloomberg web news
- 2009.10 **“VESTlab Team Wins 1st Runner Up in 2009 ConocoPhillips – Penn State Energy Prize!”**, University of Virginia web news

Entrepreneurship

- 2013.9-2015.3 **Co-Founder**, *Running River Investment LLC*, California
- 2012.3-Present **Co-Founder and Vice President**, *US–China Business and Finance Club*, University of Virginia
- 2011.1-Present **Co-Founder**, *Sinora Business and Financial Club*, US, China and Europe