

Zhishuai (Z) Zhang

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EXPERTISE & INTERESTS

- Geophysics for unconventional resources
- Microseismic
- Borehole seismic
- Rock physics
- Seismic anisotropy
- Unconventional Reservoir Geomechanics
- Distributed Acoustic Sensing
- Subsurface inverse problem

EDUCATION

University of California, Berkeley, CA

PhD in Applied Geophysics Aug. 2012 - May 2017

Texas A&M University, College Station, TX

MS in Petroleum Engineering Aug. 2010 – Aug. 2012

Nankai University, Tianjin, China

BS in Physics Sept. 2006 - June 2010

WORK & RESEARCH

Chevron, Houston, TX Feb. 2019 - **present**

Research Geophysicist (Strategic Research Unit)

- Developing geophysical methods for unconventional reservoir monitoring.
- Building geomechanical models for low frequency Distributed Acoustic Sensing signals from hydraulic fracturing.
- Investigating seismic data for hydraulic stimulation and EOR monitoring at the **Hydraulic Fracturing Test Site (HFTS)** in the Permian Basin.

Stanford University, Stanford, CA

June 2017 - Feb. 2019

Postdoctoral Research Fellow (Supervisor: Dr. Gary M. Mavko)

- Used rock physics model to understand **anisotropic** and **viscoelastic** phenomena in the **Vaca Muerta** Formation.
- Characterized reservoir with microseismic data and perforation shot data in the Vaca Muerta Formation.

University of California, Berkeley, CA

Aug. 2012 - May 2017

Graduate Research Assistant (Advisor: Dr. James W. Rector)

- Significantly improved microseismic location accuracy with **Bayesian** inversion.
- **Simultaneous** inverting for microseismic event locations and velocity model in **Newberry geothermal reservoir**.
- Developed new microseismic processing algorithm in **Marcellus** Shale.

Texas A&M University, College Station, TX

Aug. 2010 – Aug. 2012

Graduate Research Assistant (Advisor: Dr. Behnam Jafarpour)

- Carried out reservoir characterization using both deterministic and stochastic estimation methods.
- Developed a 3D non-isothermal reservoir simulator.

INTERNSHIP EXPERIENCE

Total, Houston, TX

May 2016 – Oct. 2016

Chevron , Houston, TX	June 2015 – Aug. 2015
Lawrence Livermore National Laboratory , Livermore, CA	May 2014 – Aug. 2014
ConocoPhillips , Houston, TX	May 2013 – Aug. 2013

LEADERSHIP

Society of Exploration Geophysicists Student Chapter at University of California, Berkeley	
President	May 2014 - May 2016
Society of Petroleum Engineers Student Chapter at University of California, Berkeley	
President	Sept. 2013 – Sept. 2014

COMPUTER SKILLS

Languages	MATLAB, Python, Java, Fortran, C++, Julia, Linux
Software	SeisSpace, OpenCPS, SEPlib, Petrel, CREWES, ObsPy, SGeMS, SAC, SW4

JOURNAL PAPERS

Zhang, Z., J. Du, and G. M. Mavko, 2019, Reservoir characterization using perforation shots: anisotropy, attenuation and uncertainty analysis: *Geophysical Journal International*, **216**, no. 1, 470-485

Zhang, Z., J. Du, and F. Gao, 2018, Simultaneous inversion for microseismic event location and velocity model in Vaca Muerta Formation: *Geophysics*, **83**, no. 3, KS23-KS34.

Zhang, Z., J. W. Rector, and M. J. Nava, 2018, Microseismic hydraulic fracture imaging in the Marcellus Shale using head waves: *Geophysics*, **83**, no. 2, KS1-KS10.

Zhang, Z., J. W. Rector, and M. J. Nava, 2017, Simultaneous inversion of multiple microseismic data for event locations and velocity model with Bayesian inference: *Geophysics*, **82**, no. 3, KS27-KS39.

Zhang, Z., B. Jafarpour, and L. Li, 2014, Inference of permeability heterogeneity from joint inversion of transient flow and temperature data: *Water Resources Research*, **50**, no. 6, 4710-4725.

Zhang, Y., R. Zhang, Q. Wang, **Z. Zhang**, H. Zhu, J. Liu, F. Song, S. Lin, and E. Y. B. Pun, 2010, Fluorescence enhancement of quantum emitters with different energy systems near a single spherical metal nanoparticle: *Optics Express*, **18**, no. 5, 4316-4328.

Zhang, Y., R. Zhang, **Z. Zhang**, H. Zhu, and F. Song, 2009, Surface polariton generation and fluorescence enhancement using a superlens: *Journal of the Optical Society of America B*, **26**, no. 12, 2337-2341.

CONFERENCE PAPERS

Zhang, Z., J. Du, and G. Mavko, 2019, Rock physics of hydraulic fractures: 89th Annual International Meeting, SEG, Expanded Abstracts, 3673-3677.

Ma, Y., S. Cao, J. Rector, **Z. Zhang**, 2019, Automatic first arrival picking for borehole seismic data using a pixel-level network: 89th Annual International Meeting, SEG, Expanded Abstracts, 2463-2467.

Zhang, Z., J. Du, and G. Mavko, 2018, Reservoir characterization using perforation shots: Anisotropy and attenuation: 88th Annual International Meeting, SEG, Expanded Abstracts, 2982-2986.

Zhang, Z., J. Du, and F. Gao, 2017, Simultaneous Inversion for Microseismic Event Location and Velocity Model in Vaca Muerta Formation: Paper presented at Unconventional Resources Technology Conference.

Bergery, G., **Z. Zhang**, J. Du, D. Diller, T. Shuck, and B. Fish, 2017, The Plug Drum Effect, Or Why Your Microseismic Events May Not Be Where You Think They Are: Paper presented at Unconventional Resources Technology Conference.

Zhang, Z., M. Nava, and J. Rector, 2016, Resonance in downhole microseismic data and its removal: 86th Annual International Meeting, SEG, Expanded Abstracts, 2652-2656.

Zhang, Z., M. Nava, and J. Rector, 2016, Simultaneous inversion of multiple microseismic data for event locations and velocity model with Bayesian inference: 86th Annual International Meeting, SEG, Expanded Abstracts, 2492-2497.

Zhang, Z., J. W. Rector, and M. J. Nava, 2015, Improving microseismic event location accuracy with head wave arrival time: Case study using Marcellus shale: 85th Annual International Meeting, SEG, Expanded Abstracts, 2473-2478.

Zhang, Z., J. W. Rector, and M. J. Nava, 2015, Microseismic Event Location using Multiple Arrivals: Demonstration of Uncertainty Reduction: Paper presented at Unconventional Resources Technology Conference.

Nava, M. J., J. W. Rector, and **Z. Zhang**, 2015, Characterization of microseismic source mechanism in the Marcellus shale through analysis in the spectral domain: 85th Annual International Meeting, SEG, Expanded Abstracts, 5069-5073.

Nava, M. J., J. W. Rector, and **Z. Zhang**, 2015, Identification of Microseismic Attributes Through Spectral Analysis: Paper presented at Unconventional Resources Technology Conference.

Zhang, Z., and B. Jafarpour, 2013, Joint Inversion of Production and Temperature Data for Identification of Permeability Distribution with Depth in Deep Reservoirs: Paper presented at SPE Annual Technical Conference and Exhibition.

SELECTED AWARDS

Jane Lewis Fellowship, University of California, Berkeley, 2014, 2015

Ning Fellowship, University of California, Berkeley, 2012, 2013

Session 1st Place in Petroleum Engineering Paper Contest, Texas A&M University, 2012

1st Place for 100 Projects of Creative Research for the Undergraduates, Nankai University, 2009