RESUME

ZELONG (ERIC) ZHANG

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Core Competencies

- Characterizations on fluid-rock interactions using computational and experimental approaches
- Molecular Modeling using Molecular Dynamics and Density Functional Theory Simulations
- Instrumentations including ICP-MS, IR, NMR, Raman, SEM/EDS, XRD, etc.

Education

Louisiana State University, Geology & Geophysics, Baton Rouge, LA Anticipated Dec 2019
Ph. D. Geosciences (Earth material) Advisor: Dr. Jianwei Wang GPA 3.9/4.0
Dissertation: Investigating geochemical processes of fluid-rock interactions of materials relate to energy and environment

Stony Brook University, Department of Geosciences, Stony Brook, NY May 2014
M. Sc. Geosciences (Biomineral) Advisor: Dr. Brian L. Phillips
Thesis: NMR Investigation of Organic Phosphorus in Calcite

China University of Geosciences, School of Earth Sciences, Wuhan, China Jul 2010
B. Sc. Geochemistry Advisor: Dr. Shucheng Xie & Dr. Junhua Huang

Research Experience

Louisiana State University, Department of Geology & Geophysics, LA Sep 2014 – Present
Research Assistant:

1) Investigate the geochemistry of fluid/rock interactions in shale nanopore
   - Simulate oil interactions with calcite and kerogen by Molecular Dynamics modeling
   - Calculate the energetics of oil desorption from shale by Umbrella Sampling
   - Provide improved understanding of oil recovery mechanism in unconventional shale
2) Study the degradation of crystalline nuclear material in aqueous environments
   - Apply a standard protocol to evaluate the chemical durability of apatite material $Pb_5(VO_4)_3I$
   - Perform ICP-MS, SEM/EDS, XRD, Raman, IR, etc. to characterize the sample alterations

Deep Learning for Science School, Lawrence Berkeley National Lab**,** Berkeley, CA Jul 2019
- Gained hands-on experience using TensorFlow 2.0 on Kera at NERSC HPC

Stony Brook University, Department of Geosciences, Stony Brook, NY Jul 2011 – May 2014
Research Assistant: Developed methodology with ssNMR to study organophosphates in calcite matrix

Stony Brook University, Department of Geosciences, Stony Brook, NY Mar 2011 – Jun 2011
Research Assistant: Reconstructed magnetic record from core logging data in Flathead Lake, MT

State Key Lab of Geological Processes and Mineral Resources, Hubei, China Jun 2008 – Jul 2010
Research Assistant: Provided geobiological evaluation of hydrocarbon rocks by biomarkers

Certificate and Award

Certificate

Logging for Oil and Gas Evaluation (issued by Total S.A.) 2019
Petrel Fundamentals; Petrel Geology; Petrel Property Modeling (issued by Schlumberger) 2016

Award

People's Choice Award, Best Writing Award, US D.O.E. Video Contest II Jul 2019
The New Orleans Geological Society Memorial Foundation Scholarship May 2019
Laura Cordell & John P "Jay" Moffitt Scholarship Jan 2018
Goldschmidt 2016 Travel Grant May 2016
LSU Graduate School Dean's Travel Awards May 2016
Leadership LSU Class of 2015 Apr 2015
Excellence Award of National Undergraduate Innovation Experimental Project Sep 2010

Field Experience

Louisiana State University, Geology & Geophysics, Baton Rouge, LA 2015-2016
Boresight Geosteering (BHL)
LWD Technologies & Capabilities (Baker Hughes)
Volumetric Calculation and Risk Analysis of Hydrocarbon Reservoir (Talisman)
AAPG Spring Break Field Trip, Big Bend National Park, TX (1 week)

GCAGS and Shell Exploration and Production Co., New Orleans, LA Oct 2013
Imperial Barrel Award Training – Integrated Basin and Play Analysis

China University of Geosciences (Wuhan), School of Earth Sciences, Hubei, China 2007-2009
On-site practicum in SINOPEC Jianghan Oilfield, Hubei, China (2 weeks)
Geochemical survey in Three Gorges Dam area, China (3 weeks)
Geological survey in Zhoukoudian District, Beijing, China (6 weeks)
Geology field practicum in Beidaihe District, Hebei, China (2 weeks)

Teaching Experience

Louisiana State University, Geology & Geophysics, Baton Rouge, LA Aug 2017 – Dec 2017
Student mentor: Supervised research of undergraduate student

Stony Brook University, Department of Geosciences, NY Sep 2010 – Jul 2011
Teaching Assistant: Assisted in three undergraduate courses

Patent and Publication

Zhang, Z., **Zhang**, **Z.**, Deng, M., Dai, Z., & Zhan. Z. The Preparation and use of low viscosity liquid crystal materials at low-temperature, China Patent 200910273196.0, issued Dec 2009.

Zhang, Z., Liu, H., & Wang, J. (2019). Free Energy Changes during Fluid-rock Interactions at Oil-shale Interfaces by Molecular Dynamics Simulation. *EarthArXiv Preprints* July 31. doi:10.31223/osf.io/sfhqn.

Zhang, Z., Gustin, L., Xie, W., Lian, J., Valsaraj, K. T., & Wang, J. (2019). Effect of solution chemistry on the iodine release from iodoapatite in aqueous environments. *Journal of Nuclear Materials, 525*, 161-170

Zhang, Z., Ebert, W. L., Yao, T., Lian, J., Valsaraj, K. T., & Wang, J. (2019). Chemical durability and dissolution kinetics of iodoapatite in aqueous solutions. *ACS Earth and Space Chemistry*, *3* (3), 452-462

Zhang, Z., Heath, A., Valsaraj, K. T., Ebert, W. L., Yao, T., Lian, J., & Wang, J.(2018). Mechanism of iodine release from iodoapatite in aqueous solution. *RSC advances*, *8*(8), 3951-3957.

Yao, G., **Zhang, Z.**, & Wang, J. (2017). Beta transmutations in apatites with ferric iron as an electron acceptor–implication for nuclear waste form development. *Physical Chemistry Chemical Physics*, *19*(37), 25487-25497.

Phillips, B. L., **Zhang, Z.**, Kubista, L., Frisia, S., & Borsato, A. (2016). NMR spectroscopic study of organic phosphate esters coprecipitated with calcite. *Geochimica et Cosmochimica Acta*, *183*, 46-62.

Zhang, Z., Deng, M., Zhang, Z., Wei, B., & Xuan, L. Study on the synthesis of difluorooxymethylene alkybenzene and the properties of low temperature viscosity *Digest of Technical Paper*, ASID' 09, (2009)190-1

Professional Communication (Talk, Video, and Poster)

Life at the Frontiers of Energy Research Video Contest II, US Department of Energy July 2019
Video: Nuclear Energy Waste and WastePD (on behalf of WastePD)

Goldschmidt Conference, Boston, MA Aug 2018
Poster: Energetics of the Oil Interaction with Calcite and Kerogen – Implication for Hydrocarbon Transport and Storage in Shale

MRS Spring, Phoenix, AZ Mar 2018
Poster: Release Mechanism of Iodine Retained by Apatite Structure Waste Form in Aqueous Environments

AGU Fall, New Orleans, LA Dec 2017
Talk: Mechanisms of Iodine Release from Iodoapatite in Aqueous Solution
Poster: The interfacial energetics of the oil molecules interactions with shale media using molecular dynamics simulation