

# CURRICULUM VITAE

## ZELONG ZHANG

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### Education

- Louisiana State University**, Geology & Geophysics, Baton Rouge, LA Dec 2020  
Ph. D. Geology Advisor: Dr. Jianwei Wang  
Dissertation: Investigating Geochemical Processes of Fluid-rock Interactions of Materials Related to Energy and Environment
- Stony Brook University**, Department of Geosciences, Stony Brook, NY May 2014  
M. Sc. Geosciences Advisor: Dr. Brian L. Phillips  
Thesis: NMR Investigation of Organic Phosphorus in Calcite
- China University of Geosciences**, School of Earth Sciences, Wuhan, China Jun 2010  
B. Sc. Geochemistry Advisor: Dr. Shucheng Xie & Dr. Junhua Huang  
Thesis: Study on 3-hydroxy Acids Distribution in Stalagmite as a Record of Microbial Response to Paleoclimate Variation

### Working Experience

- Optum** (UnitedHealth Group), San Jose, CA May 2023 – present  
Data Scientist:  
Build enterprise solutions with AI to improve the efficiency and efficacy of US healthcare systems
- Change Healthcare**, Seattle, WA Jan 2021 – May 2023  
AI Data Scientist:  
Developed AI solutions to improve the efficiency of revenue cycle of US healthcare systems
- Insight Data Science**, San Francisco, CA Nov 2020 – Jan 2021  
Data Science Fellow:  
Predicted user decision with text data of THE RUN EXPERIENCE™, a fitness app from Ongo Science

### Research Experience

- Louisiana State University**, Department of Geology & Geophysics, LA  
Research Assistant: Jan 2015 – Dec 2019  
Transient: Sep 2014 – Dec 2014

- Investigated the geochemistry of fluid/rock interfacial interactions in shale
- Studied the degradation of nuclear waste form materials in aqueous environments
  - U.S. Department of Energy, EFRC WastePD (DOE Award: DE-SC0016584) & NEUP (Nuclear Energy University Program, DOE Award: AC07-05ID14517)

**Lawrence Berkeley National Lab**, Deep Learning for Science School, Berkeley, CA Jul 2019

Trainee:

- 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 NMR to study organophosphates in calcite matrix
  - U.S. National Science Foundation, EAR, Division of Earth Sciences (NSF Award: 0819838)

**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

**China University of Geosciences**, School of Earth Sciences, Wuhan, China Jan 2008 – Jun 2010

Research Co-leader:

- Invented an experimental apparatus to physically simulate geology structures

**Wuhan Polytechnic University**, School of Chemistry, Hubei, China Jan 2009 – Oct 2009

Research Assistant:

- Developed methodology to test the viscosity of liquid crystal

## Teaching Experience

**Louisiana State University**, Geology & Geophysics, Baton Rouge, LA Jan 2020 – May 2020

- Teaching Assistant: Teach historical geology lab for non-major college students

**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

## Professional Training

**Lawrence Berkeley National Laboratory**, Berkeley, CA July 2019

[Deep Learning for Science School](#) (Summer School)

<b>Goldschmidt 2018</b> , Boston, MA	Aug 2018
Data Science in Geochemistry (Workshop)	
<b>Louisiana State University</b> , Geology & Geophysics, Baton Rouge, LA	2015-2016
Boresight Geosteering (BHL)	
LWD Technologies & Capabilities (Baker Hughes)	
Volumetric Calculation and Risk Analysis of Hydrocarbon Reservoir (Talisman)	
<b>Shell Exploration and Production Co. and AAPG</b> , New Orleans, LA	Oct 2013
Imperial Barrel Award Training – Integrated Basin and Play Analysis	

## Field Experience

<b>Louisiana State University</b> , Geology & Geophysics, Baton Rouge, LA	Apr 2015
AAPG Spring Break Field Trip, Big Bend National Park, TX (1 week)	
<b>China University of Geosciences (Wuhan)</b> , School of Earth Sciences, Hubei, China	2007-2009
On-site practicum in SINOPEC Jiangnan 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)	

## 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

<a href="#">Winner (3<sup>rd</sup> place) of CodeFest 2022</a> , Change Healthcare's top hackathon event	2022
<a href="#">Winner (1<sup>st</sup> place) of CodeFest 2021</a> , Change Healthcare's top hackathon event	2021
Spotlights Award "Align – Foster Teamwork", Change Healthcare	Jun 2021
Spotlights Award "Navigate – Advances Innovation", Change Healthcare	Jun 2021
Long-Term Incentive Award (RSU \$50,000), Change Healthcare	Mar 2021
<a href="#">Best Writing Award</a> , US Department of Energy EFRC Video Contest II	Jul 2019
<a href="#">People's Choice Award</a> , US Department of Energy EFRC 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 2015	Apr 2015
Excellence Award of National Undergraduate Innovation Experimental Project	Sep 2010

## Professional Communication (Talk, Video, and Poster)

<b>EFRC WastePD Meeting at University of North Texas</b> , Denton, TX	Oct 2019
Poster: Iodine Release from Apatite Ceramic Waste Form in Aqueous Environments	

<b>Life at the Frontiers of Energy Research Video Contest II</b> , US D.O.E.	July 2019
Video: <a href="#">Nuclear Energy Waste and WastePD</a> (on behalf of WastePD)	
<b>Deep Learning for Science School</b> , Lawrence Berkeley National Lab, Berkeley, CA	July 2019
Poster: An integrated approach to study the iodine immobilization in apatite ceramic waste forms - from Artificial Neural Network to First Principle Calculation	
<b>EFRC WastePD Meeting at University of Virginia</b> , Charleville, VA	Sep 2018
Poster: Long Term Chemical Durability of Iodine-bearing Apatite	
<b>Goldschmidt Conference</b> , Boston, MA	Aug 2018
Workshop: Data Science in Geochemistry	
Poster: Energetics of the Oil Interaction with Calcite and Kerogen – Implication for Hydrocarbon Transport and Storage in Shale	
<b>D.O.E. EFRC Mid-term Review Meeting</b> , Gaithersburg, MD	Apr 2018
Poster: Long-term Chemical Duration of Iodine-bearing Apatite in Aqueous Environments	
<b>MRS Spring</b> , Phoenix, AZ	Mar 2018
Poster: Release Mechanism of Iodine Retained by Apatite Structure Waste Form in Aqueous Environments	
<b>WastePD Monthly Research Highlight Webinar</b>	Dec 2017
Talk: <a href="#">Mechanisms of Iodine Release from Iodoapatite in Aqueous Solution</a>	
<b>AGU Fall</b> , New Orleans, LA	Dec 2017
Talk: <a href="#">Mechanisms of Iodine Release from Iodoapatite in Aqueous Solution</a>	
Poster: The interfacial energetics of the oil molecules interactions with shale media using molecular dynamics simulation	
<b>EFRC WastePD Meeting at Pacific Northwest National Lab</b> , Richland, WA	Sep 2017
Poster: Mechanisms of Iodine Release from Iodoapatite in Aqueous Solution	
<b>WastePD Design Workshop at QuesTek Innovations, LLC</b> , Evanston, IL	April 2017
<b>EFRC WastePD Kick-off Meeting</b> , OSU, Columbus, OH	Dec 2016
<b>4th Annual LONI HPC Parallel Programming Workshop</b> , LSU, Baton Rouge, LA	Jun 2015
<b>Gordon Research Conferences, Biomineralization</b> , New London, NH	Aug 2014
Poster: NMR Investigation of Organic Phosphoesters Coprecipitated with Calcite	
<b>Gordon Research Conferences, Organic Geochemistry</b> , Holderness, NH	Aug 2014
Poster: Biomarker Phospholipids in Calcite – NMR evidence	
<b>Goldschmidt Conference</b> , Sacramento, CA	Jun 2014
<b>16th Annual Chemistry Event Symposium</b> , Boston, MA	May 2014
Poster: Organic Phosphorus Speciation in Carbonate Mineral – NMR Study	

<b>AAPG Eastern Section</b> , Morgantown, WV	Nov 2013
Student Chapter Leadership Workshop	
<b>SPE ATCE international</b> , New Orleans, LA	Sep2013– Oct 2013
<b>SEG International Exposition and Annual Meeting</b> , Houston, TX	Sep 2013
<b>IEEE 23rd Magnet Technology Conference</b> , Boston, MA	Jul 2013

### Reviewer Experience

<i>Environmental Science and Pollution Research</i> (a Springer journal)	Dec 2020
<a href="#">NeurIPS 2020 workshop on Machine Learning and the Physical Sciences</a> , virtual	Oct 2020
<i>Energy &amp; Fuel</i> (an ACS journal)	Jul 2020
<a href="#">NeurIPS 2019 workshop on Machine Learning and the Physical Sciences</a> , Canada	Sep 2019

### volunteer Experience

#### Fundraising

- Science & Sprints, College of Science, LSU, Baton Rouge, LA Oct 2019

#### Science Education

- EarthArXiv since Mar 2020
- GSA, South Central Section 50<sup>th</sup> Annual Meeting, Baton Rouge, LA Mar 2016
- Louisiana Children’s Museum, 15<sup>th</sup> Super Saurus Saturday, New Orleans, LA Apr 2015
- Louisiana State University, Baton Rouge, LA
  - Live Gold Leadership Conference Nov 2014
  - Super Science Saturday Oct 2014
- New York City FIRST Mega Celebration of Science and Technology, NY Mar 2013
- Conference on the Geology of Long Island and Metropolitan New York (Annual) 2011-2012

#### Social Welfare

- Louisiana State University, Baton Rouge, LA
  - 6<sup>th</sup> Annual Spring Greening Day Apr 2015
  - “Geaux BIG Baton Rouge” LSU 3<sup>rd</sup> Annual Day of Service Mar 2015
- Habitat for Humanity, Baton Rouge, LA Mar 2015
- International Thanksgiving Banquet, Baton Rouge, LA Nov 2014

#### Animal Welfare

- Cat Haven, Baton Rouge, LA May 2019 - Present
- Companion Animal Alliance, Baton Rouge, LA Jul 2018 – May 2019

### Patents

Methods, Systems, And Computer Program Products For Flagging Dental Claims For Further Scrutiny Based On Processing Of Dental Clinical Images And Periodontal Charts Using Multiple Artificial Intelligence (AI) Models, US Patent 18/400,276 · Filed Dec 29, 2023.

Artificial Intelligence (AI) Assisted Decision Support System for Adjudicating Dental Claims and Related Methods and Computer Program Products, US Patent 18/189,293 · Filed Mar 27, 2023

[The Preparation and use of low viscosity liquid crystal materials at low-temperature](#), China Patent 200910273196.0, issued Dec 2009.

## Publications

Wang, J., Ghosh, D. B., & **Zhang, Z.** (2023). [Computational materials design for ceramic Nuclear waste forms using machine learning, First-principles calculations, and kinetics rate theory](#). *Materials*, 16(14), 4985.

Mohanty, C., Guo, X., Kaya, H., Gin, S., Yang, K., **Zhang, Z.**, Kim, S., Lian, J., Wang, J., & Frankel, G. (2022). [Long-term interactive corrosion between International Simple Glass and stainless steel](#). *npj Materials Degradation*, 6(1), 50.

**Zhang, Z.\***, Adrienne, S., & Wang, J\*. [Temperature Effect on Interactions of Oil Droplet with Water-wetted Shale Kerogen at Reservoir Temperatures](#). *arXiv preprint arXiv:2007.09741*.

Liu, H.\*, Xu, K., Wilson, C., Bentley, S., Xue, Z., & **Zhang, Z.** (2022). [Geomorphologic response and patchy mud infilling in a sandy dredge pit in Ship Shoal, Louisiana shelf, USA](#). *Geomorphology*. 396, 107983

Lu, J., Qu, Y., Yan, D., Zhang, Z.\*, Guan, J., & **Zhang, Z.\*** (2021). [Synthesis, Characterisation, and Effects of Molecular Structure on Phase Behaviour of 4-Chloro-1,3-Diazobenzene Bent-Core Liquid Crystals with High Photosensitivity](#). *Liquid Crystals*, 49(4), 442-455.

**Zhang, Z.\***, Liu, H., & Wang, J. (2020). [Energetics of Interfacial Interactions of Hydrocarbon Fluids with Kerogen and Calcite using Molecular Modeling](#). *Energy & Fuels*. 34 (4), 4251-4259

**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