

Peng Yang, Ph.D.

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Postdoctoral Research Associate

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EDUCATION

- May 2019 **Ph.D., Soil & Environmental Geochemistry**
University of Wyoming, Laramie, Wyoming
Dissertation: Effects of solution chemistry on Mn(II)-induced structural transformation of birnessite; Advisor: Dr. Mengqiang Zhu
- Jul 2012 **Master of Engineering, Chemical Engineering and Technology**
Dalian University of Technology, Dalian, Liaoning, China
Thesis: Electronegativity and hardness of inorganic crystal materials; Advisors: Dr. Keyan Li & Dr. Dongfeng Xue
- Jul 2009 **Bachelor of Agriculture, Plant Protection**
Shenyang Agricultural University, Shenyang, Liaoning, China

RESEARCH EXPERIENCE

- Jan 2024 – present **Postdoctoral Research Associate**
Chemical Sciences Division, Oak Ridge National Laboratory, Oak Ridge, Tennessee; Supervisor: Dr. Andrew G. Stack
- Determining the transformation mechanisms of amorphous magnesium carbonate during direct air capture of CO₂ using MgO looping using X-ray and neutron diffraction and atomic pair distribution function analysis
- Sept 2022 – Dec 2023 **Senior Research Associate**
Chemical Sciences and Engineering Division, Argonne National Laboratory, Lemont, Illinois; Supervisor: Dr. Sang Soo Lee
- Determining the interactions of carbonated solution with magnesium- and iron-rich silicate minerals using transmission X-ray microscopy, digital holographic microscopy, and scanning electron microscopy (Yang et al., In preparation)
 - Determining the interactions of contaminants with minerals and the effects of

environmental conditions (e.g., temperature and pressure) using X-ray crystal truncation rod, resonant anomalous X-ray reflectivity, and atomic force microscopy (Yang et al., [ACS Earth & Space Chem. 2023](#); Yang et al., to be submitted & in preparation)

Sept 2019 – Aug 2022 **Postdoctoral Fellow**

Chemical Sciences and Engineering Division, Argonne National Laboratory, Lemont, Illinois; Supervisor: Dr. Paul Fenter

- Determined the interactions of cationic (Zn^{2+} , Pb^{2+} , and Rb^+ , etc.) and anionic contaminants (arsenate, selenate, and molybdate, etc.) with barite (BaSO_4) and quartz (SiO_2) surfaces and the effects of environmental conditions (such as temperature, pressure, and background electrolytes) using synchrotron X-ray crystal truncation rod, resonant anomalous X-ray reflectivity, and atomic force microscopy ([Yang et al., Environ. Sci. Technol. 2022](#); Yang et al., in preparation)

Dec 2014 – May 2019 **Graduate Research Assistant**

Department of Ecosystem Science and Management, University of Wyoming, Laramie, Wyoming; Supervisor: Dr. Mengqiang Zhu

- Determined the transformation mechanisms of layered to tunneled Mn oxides and the effects of metal cations or oxyanions using synchrotron X-ray absorption spectroscopy, powder X-ray diffraction, X-ray atomic pair distribution function analysis, and transmission electron microscopy ([Yang et al., Geochim. Cosmochim. Acta 2018](#); [Yang et al., Environ. Sci. Technol. 2019, 2021](#); Yang et al. *Geochim. Cosmochim. Acta* in preparation)

Sept 2013 – Nov 2014 **Graduate Research Assistant**

College of Chemistry and Chemical Engineering, University of Chinese Academy of Sciences, Beijing, China; Supervisor: Dr. Yujian He

- Determined residual glyphosate on genetically modified soybeans

Aug 2012 – Aug 2013 **Research Laboratory Assistant**

Institute of Soil Science, Chinese Academy of Sciences, Nanjing, Jiangsu, China; Supervisor: Dr. Dongmei Zhou

- In charge of pilot-scale demonstration of ex-situ chemical remediation of Cr(VI)-contaminated soils ([Two patents 2014, 2015](#))

Sept 2009 – Jul 2012 **Graduate Research Assistant**

College of Chemical Engineering, Dalian University of Technology, Dalian, Liaoning, China; Supervisors: Dr. Keyang Li and Dr. Dongfeng Xue

- Established semiempirical models to predict macroscopic physical properties of inorganic materials using atomic parameters such as atomic electronegativity, bond length, bond angle, etc. (Published in [Acta Mater., J.](#)

Phys. Chem. C, Funct. Mater. Lett., and Rev. Adv. Sci. Eng. 2012)

TEACHING AND MENTORING EXPERIENCE

Dec 2014 – May 2019 **Graduate Teaching Assistant**

Department of Ecosystem Science and Management, University of Wyoming,
Laramie, Wyoming

- Served as a teaching assistant in the following classes:
SOIL 3130: Soils and Environmental Quality (Fall 2014, 2015)
SOIL 4130/5130: Chemistry of the Soil Environment (Spring 2015)
REWM 3100: Principles of Water Quality (Fall 2016)
REWM 4710/5710: Watershed Water Quality and Management (Spring 2017, 2019)
- Lectured in the following classes:
REWM 3100: Principles of Water Quality (Fall 2016)
REWM 4710/5710: Watershed Water Quality and Management (Spring 2017, 2018, and 2019)
SOIL 4130/5130: Chemistry of the Soil Environment (Spring 2019)

Aug 2017 – May 2018 **Undergraduate Mentor**

Changgong Xu, Department of Chemistry, University of Wyoming, Laramie,
Wyoming

RESEARCH INTERESTS

- Mineral-contaminant interactions and contaminant transport
- Mineral-organic matter interactions and carbon capture and sequestration
- Soil mineral nucleation, growth, and transformation
- Contamination remediation techniques
- Carbon dioxide sequestration and direct air capture

SYNCHROTRON BEAMTIME PROPOSALS APPROVED

	Light Source	Title	PI	Shift Approved
2020-2021	Advanced Photon Source	The effect of pH on ion adsorption to barite surfaces	Peng Yang	36
2020-2021	Advanced Photon Source	Co-sorption of cations and anions at the barite (001)–water interface	Peng Yang	36
2021-2022	Advanced Photon Source	Effects of temperature and pressure on ion sorption to barite surfaces	Peng Yang	18

2022-2023	Advanced Photon Source	Sorption of arsenic at the barite (001)–water interface	Peng Yang	18
2022-2023	Advanced Photon Source	Effects of metal cations on arsenate sorption at barite (001) surface	Peng Yang	30
2023-2024	National Synchrotron Light Source-II	In-situ probing surface termination heterogeneity of quartz (101) surface and its effects on contaminant sorption	Peng Yang (Transferred)	9

PUBLICATIONS

Published Journal Articles ([Google Citations](#): 688; h-index: 15, as of January 29, 2024)

Google Scholar: <https://scholar.google.com/citations?user=kCv6hbYAAAAJ&hl>

1. X. Li, **P. Yang**, W. Zhao, F. Guo, D. P. Jaisi, S. Mi, H. Ma, B. Lin, X. Feng, W. Tan, X. Wang. Adsorption mechanisms of glyphosate on ferrihydrite: effects of Al substitution and aggregation state. *Environmental Science & Technology* **2023**, *57*, 14384-14395.
2. K. Wen, **P. Yang**, M. Zhu. Mineral surface-catalyzed oxidation of Mn(II) by bromate: Implications for the occurrence of Mn oxides on Mars. *Geochimica et Cosmochimica Acta* **2023**, *360*, 151-162.
3. **P. Yang**, S. S. Lee, J. N. Bracco, P. A. Fenter, A. G. Stack. Sorption of arsenate, selenate, and molybdate on the barite (001) surface. *ACS Earth and Space Chemistry* **2023**, *7*, 1545-1556.
4. **P. Yang**, N. Rampal, J. Weber, J. N. Bracco, P. A. Fenter, A. G. Stack, S. S. Lee. Synergistic enhancement of lead and selenate uptake at the barite (001)–water interface. *Environmental Science & Technology* **2022**, *56*, 16801-16810.
5. Q. Wang, H. Jung, B. Wan, P. Liu, **P. Yang**, Y. Tang. Transformation kinetics of phosphorus and nitrogen in iron-rich sewage sludges during hydrothermal treatment: Effects of treatment conditions and recovery of nutrients. *ACS Sustainable Chemistry & Engineering* **2021**, *9*, 10630-10641.
6. C. Ren, **P. Yang**, J. Sun, E. Y. Bi, J. Gao, J. Palmer, M. Zhu, Y. Wu, J. Liu. A bioinspired molybdenum catalyst for aqueous perchlorate reduction. *Journal of the American Chemical Society* **2021**, *143*, 7891-7896.
7. B. Wan, **P. Yang**, H. Jung, M. Zhu, J. M. Diaz, Y. Tang. Iron oxides catalyze the hydrolysis of polyphosphate and precipitation of calcium phosphate minerals. *Geochimica et Cosmochimica Acta* **2021**, *305*, 49-65.
8. **P. Yang**, K. Wen, K. A. Beyer, W. Xu, Q. Wang, D. Ma, J. Wu, M. Zhu. Inhibition of oxyanions on redox-driven transformation of layered manganese oxides. *Environmental Science & Technology* **2021**, *55*, 3419-3429.
9. X. Wang, Q. Wang, **P. Yang**, X. Wang, L. Zhang, X. Feng, M. Zhu, Z. Wang. Oxidation of Mn(III) species by Pb(IV) oxide as a surrogate oxidant in aquatic systems. *Environmental Science & Technology* **2020**, *54*, 14124-14133.

10. C. Ren, **P. Yang**, J. Gao, X. Huo, X. Min, E. Y. Bi, Y. Liu, Y. Wang, M. Zhu, J. Liu. Catalytic reduction of aqueous chlorate with MoO_x immobilized on Pd/C. *ACS Catalysis* **2020**, *10*, 8201-8211.
11. D. Ma, J. Wu, **P. Yang**, M. Zhu. Coupled manganese redox cycling and organic carbon degradation on mineral surfaces. *Environmental Science & Technology* **2020**, *54*, 8801-8810.
12. **P. Yang**, J. E. Post, Q. Wang, W. Xu, R. Geiss, P. R. McCurdy, M. Zhu. Metal adsorption controls stability of layered manganese oxides. *Environmental Science & Technology* **2019**, *53*, 7453-7462.
13. X. Wang, B. L. Phillips, J.-F. Boily, Y. Hu, Z. Hu, **P. Yang**, X. Feng, W. Xu, and M. Zhu. Phosphate sorption speciation and precipitation mechanisms on amorphous aluminum hydroxide. *Soil Systems* **2019**, *3*, 20.
14. Q. Wang, **P. Yang**, and M. Zhu. Effects of metal cations on coupled birnessite structural transformation and fulvic acid adsorption and oxidation. *Geochimica et Cosmochimica Acta* **2019**, *250*, 292-310.
15. S. Lan, X. Wang, **P. Yang**, Z. Qin, M. Zhu, J. Zhang, F. Liu, W. Tan, Q. Huang, X. Feng. The catalytic effect of AQDS as an electron shuttle on Mn (II) oxidation to birnessite on ferrihydrite at circumneutral pH. *Geochimica et Cosmochimica Acta* **2019**, *247*, 175-190.
16. **P. Yang**, S. Lee, J. E. Post, H. Xu, Q. Wang, W. Xu, M. Zhu. Trivalent manganese on vacancies triggers rapid transformation of layered to tunneled manganese oxides (TMOs): Implications for occurrence of TMOs in low-temperature environment. *Geochimica et Cosmochimica Acta* **2018**, *240*, 173-190.
17. Q. Wang, **P. Yang**, M. Zhu. Structural transformation of birnessite by fulvic acid under anoxic conditions. *Environmental Science & Technology* **2018**, *52*, 1844-1853.
18. X. Wang, Y. Hu, Y. Tang, **P. Yang**, X. Feng, W. Xu, M. Zhu. Phosphate and phytate adsorption and precipitation on ferrihydrite surfaces. *Environmental Science: Nano* **2017**, *4*, 2193-2204.
19. **P. Yang**, K. Li, D. Xue. Anisotropic hardness estimations of some inorganic functional materials. *Functional Materials Letters* **2012**, *5*, 1250003.
20. K. Li, **P. Yang**, D. Xue. Anisotropic hardness prediction of crystalline hard materials from electronegativity. *Acta Materialia* **2012**, *60*, 35-42.
21. K. Li, **P. Yang**, L. Niu, D. Xue. Group electronegativity for prediction of materials hardness. *Journal of Physical Chemistry A* **2012**, *116*, 6911-6916.
22. K. Li, **P. Yang**, L. Niu, D. Xue. Hardness of inorganic functional materials. *Reviews in Advanced Sciences and Engineering* **2012**, *1*, 265-279.

Manuscripts in Publication or Preparation

23. **P. Yang**, K. Yuan, S. Irle, L. M. Anovitz, P. A. Fenter, A. G. Stack, S. S. Lee. Sorption of Rb⁺ at quartz (101)-water interfaces: Roles of silicon-vacancy at quartz surface. To be submitted to *ACS Earth and Space Chemistry*.
24. **P. Yang**, K. Wen, J. E. Post, K. A. Beyer, W. Xu, M. Zhu. Mn(II)-induced transformation of δ-MnO₂ in seawater. In preparation.
25. **P. Yang**, S. S. Lee, P. A. Fenter, A. G. Stack. Stabilization of the barite (001) surface by Pb²⁺ sorption. In preparation.

INVITED PRESENTATION(S) (*Presenter)

1. **P. Yang***, S. S. Lee, N. Rampal, J. Bracco, P. Fenter, A. G. Stack. Lead-selenate cooperativity at the barite (001)–water interface. ACS Spring Meeting, Bonding through Chemistry, Virtual, San Diego, CA, March 20-24, **2022**. Oral presentation.

CONTRIBUTED PRESENTATIONS (*Presenter)

2. P. Zapol*, G. Betrie, **P. Yang**, A. Sundar, S. S. Lee, P. Fenter. Multiscale modeling of carbon dioxide mineralization reactions in porous media. 2023 AIChE Annual Meeting, Orlando, FL, November 5-10, **2023**. Oral presentation.
3. **P. Yang***, S. S. Lee, P. Fenter, J. N. Bracco, N. Rampal, J. Weber, A. G. Stack. Sorption behavior of contaminant ions at the barite (001)–water interface: implications of contamination remediation. 2023 Argonne Postdoctoral Research and Career Symposium, Lemont, IL, November 9, **2023**. Poster presentation.
4. **P. Yang***, J. N. Bracco, P. Fenter, A. G. Stack, S. S. Lee. Sorption of oxyanionic contaminants at the barite (001)-water interface. 2023 Goldschmidt Conference, Lyon, France & Virtual, July 9-14, **2023**. Oral presentation.
5. S. S. Lee*, C. Park, J. N. Bracco, **P. Yang**, A. G. Stack, P. Fenter. Development of an in-situ apparatus for synchrotron-based surface scattering measurements at mineral-water interfaces in elevated pressure and temperature conditions. 2023 Goldschmidt Conference, Lyon, France & Virtual, July 9-14, **2023**. Poster presentation.
6. **P. Yang***, S. S. Lee, J. N. Bracco, P. A. Fenter, A. G. Stack. Uptake of arsenate, selenate, and molybdate on the barite (001) surface. ACS Spring 2023 Meeting, Indianapolis, IN, March 26-30, **2023**. Oral presentation.
7. **P. Yang**, K. Yuan, R. Khanal, S. Irle, L. Anovitz, P. Fenter, A. G. Stack, S. S. Lee*. Molecular-scale observation of variations in Rb^+ adsorption mechanism controlled by the heterogeneity of the quartz (101) surface. ACS Spring 2023 Meeting, Indianapolis, IN, March 26-30, **2023**. Oral presentation.
8. M. Zhu*, **P. Yang**. Redox-driven crystallization of layered manganese oxides. ACS Fall 2022 Meeting, Chicago, IL, August 20-24, **2022**. Oral presentation.
9. **P. Yang***, N. Rampal, J. Weber, J. Bracco, P. Fenter, A. G. Stack, S. S. Lee. Synergistic enhancement of lead and selenate uptake by barite. GSA Annual Meeting 2022, Denver, CO, October 9-12, **2022**. Oral presentation.
10. M. Zhu*, **P. Yang**. Redox-driven crystallization of manganese oxides. GSA Annual Meeting 2022, Denver, CO, October 9-12, **2022**. Oral presentation.
11. **P. Yang***, P. Fenter, A. G. Stack, S. S. Lee. Effects of surface structural defects on Rb^+ sorption on the quartz (101) surface. ACS Spring 2022 Meeting, Virtual, San Diego, CA, March 20-24, **2022**. Oral presentation.
12. **P. Yang***, S. S. Lee, N. Rampal, J. N. Bracco, P. Fenter, A. G. Stack. Enhanced selenate uptake by lead incorporation at the barite(001)–water interface. ACS Spring 2022 Meeting, Virtual, San Diego, CA, March 20-24, **2022**. Oral presentation.
13. M. Zhu*, **P. Yang**. Effects of co-existing cations and anions on Mn(II)-driven redox transformation of layered manganese oxides. ACS Fall 2021 Meeting, Atlanta, GA & Virtual, August 22-26, **2021**. Oral presentation.

presentation.

14. **P. Yang***, K. Wen, K. A. Beyer, W. Xu, M. Zhu. Mn(II)-driven redox transformation of layered Mn oxides in seawater. ACS Spring 2021 Meeting, Virtual, April 5-16, **2021**. Oral presentation.
15. **P. Yang***, S. S. Lee, J. N. Bracco, P. Fenter, A. G. Stack. Enhanced selenate uptake by lead co-sorption at the barite (001)-water interface. ACS Spring 2021 Meeting, Virtual, April 5-16, **2021**. Oral presentation.
16. M. Zhu*, **P. Yang**. Mn(II)-promoted phase transformation of manganese oxides. ACS Spring 2021 Meeting, Virtual, April 5-16, **2021**. Oral presentation.
17. **P. Yang***, S. S. Lee, J. N. Bracco, P. Fenter, A. G. Stack. Co-sorption of lead and selenate on barite (001) surface. 2020 Goldschmidt Unofficial Zoom Meeting, June 25, **2020**. Oral presentation.
18. **P. Yang***, S. S. Lee, J. N. Bracco, P. Fenter, A. G. Stack. Synergistic incorporation of lead and selenate into barite. 2020 Goldschmidt Conference, Virtual, June 22-26, **2020**. Oral presentation.
19. **P. Yang***, J. Post, S. Lee, Q. Wang, W. Xu, R. Geiss, P. McCurdy, H. Xu, M. Zhu. Adsorption of metal cations and oxyanions controls stability of layered manganese oxides. Geological Society of America 2019 Annual Meeting, Phoenix, AZ, September 22-25, **2019**. Oral presentation.
20. **P. Yang***, S. Lee, J. Post, H. Xu, Q. Wang, W. Xu, M. Zhu. Rapid transformation of layered to tunneled manganese oxides triggered by trivalent manganese adsorbed on vacancies. 55th Clay Mineral Society Annual Meeting, Urbana-Champaign, IL, June 11 – 14, **2018**. Oral presentation.
21. **P. Yang***, S. Lee, J. Post, H. Xu, Q. Wang, W. Xu, M. Zhu. Rapid transformation of layered to tunneled manganese oxide triggered by interlayer Mn(III). 255th ACS National Meeting & Exposition, New Orleans, LA, March 18 – 22, **2018**. Oral presentation.
22. **P. Yang***, Q. Wang, M. Zhu. Effects of ligands on structural transformation of birnessite during the reaction with Mn(II). 255th ACS National Meeting & Exposition, New Orleans, LA, March 18 – 22, **2018**. Poster presentation.
23. Q. Wang*, **P. Yang**, M. Zhu. Effects of cations on structural transformation of birnessite by fulvic acid under anoxic conditions. 255th ACS National Meeting & Exposition, New Orleans, LA, March 18 – 22, **2018**. Poster presentation.
24. **P. Yang***, Q. Wang, M. Zhu. Cation effects on the reaction between birnessite and Mn(II). 253rd ACS National Meeting & Exposition, San Francisco, CA, April 2 – 6, **2017**. Oral presentation.
25. **P. Yang***, Q. Wang, M. Zhu. Reactions of birnessite with Mn(II) under anoxic conditions. 253rd ACS National Meeting & Exposition, San Francisco, CA, April 2 – 6, **2017**. Poster presentation.
26. Q. Wang*, **P. Yang**, M. Zhu. Adsorption and oxidation of fulvic acid by birnessite under various pH conditions. 253rd ACS National Meeting & Exposition, San Francisco, CA, April 2 – 6, **2017**. Poster presentation.
27. Q. Wang*, **P. Yang**, M. Zhu. Cation effects on the adsorption and oxidation of fulvic acid by manganese oxides. 253rd ACS National Meeting & Exposition, San Francisco, CA, April 2 – 6, **2017**. Oral presentation.
28. Q. Wang*, **P. Yang**, M. Zhu. Adsorption and oxidation of fulvic acid by birnessite under various pH conditions. 253rd ACS National Meeting & Exposition, San Francisco, CA, April 2 – 6, **2017**. Poster presentation.

29. **P. Yang***, Q. Wang, K. Livi, M. Zhu. Cation effects on the reactions of birnessite with Mn(II). 251st ACS National Meeting & Exposition, San Diego, CA, March 13 – 17, **2016**. Oral presentation.
30. Q. Wang*, **P. Yang**, M. Zhu. Adsorption and oxidation of fulvic acid by birnessite. 251st ACS National Meeting & Exposition, San Diego, CA, March 13 – 17, **2016**. Oral presentation.
31. **P. Yang***, K. Li, D. Xue. Anisotropic Hardness Prediction of Crystal Materials. Forum on Chemistry of Graduate University of Chinese Academy of Sciences, Changchun Institute of Applied Chemistry, Chinese Academy of Sciences, Changchun, China. December 9 – 11, **2011**. Oral presentation.

DEPARTMENT SEMINARS

32. **P. Yang**. Identification of a new phase during birnessite transformation. Heirloom, Brisbane, CA (Virtual), September 19, **2023**.
33. **P. Yang**. Molecular Mechanisms of Mineral-Contaminant Ion Interactions. Chemical Sciences Division, Oak Ridge National Laboratory, Oak Ridge, TN, August 31, **2023**.
34. **P. Yang**. Mineral-Water Interfacial Reaction-Controlled Contaminant Transport. Department of Natural Sciences, University of Houston-Downtown, Houston, TX (Virtual), April 18, **2023**.
35. **P. Yang**. Co-uptake of lead and selenium by barite. Soil and Environmental Biogeochemistry Group, Department of Ecosystem Science and Management, University of Wyoming, Laramie, WY, October 13, **2022**.
36. **P. Yang**. Mineral-water interfacial reactions and mineral transformation: Connections to contamination remediation. Department of Environmental and Civil Engineering, New Mexico State University, Las Cruces, NM, August 3, **2022**.
37. **P. Yang**. Understanding ion cooperativity during cation-anion sorption at the barite-water interface. Postdoctoral Seminar, Chemical Sciences and Engineering Division, Argonne National Laboratory, Lemont, IL, April 13, **2021**.
38. **P. Yang**. Mn(II)-promoted rapid transformation from layered to tunneled Mn oxides. Chemical Sciences and Engineering Division, Argonne National Laboratory, Lemont, IL, March 22, **2019**.
39. **P. Yang**. Birnessite, the most common Mn oxide in the natural environment, and its structural transformation by reacting with Mn(II). Soils Group Meetings, Department of Ecosystem Science and Management, University of Wyoming, Laramie, WY, October 6, **2018**.

PATENTS

1. **P. Yang**, X. Hao, D. Zhou. 2015. A leaching method of Cr(VI)-contaminated soil. Patent: CN103521513B (Expired due to discontinued patent fee payment by the institution).
2. X. Hao, **P. Yang**, D. Zhou. 2014. A new device to eliminate heavy metal ions from the soil by ex-situ eluting. Patent: CN203484404U (Expired due to discontinued patent fee payment by the institution).

PROFESSIONAL SERVICE AND ACTIVITIES

- Dec 2021 – present **Guest Editor**
- Special Issue “[Sustainability in Water Treatment](#)” in *Sustainability*
- Aug 2023 – present **Review Editor**
- Soil Processes section of *Frontiers in Environmental Science*
- Dec 2021 – present **Synchrotron X-ray Facility User Proposal Reviewer**
- Stanford Synchrotron Radiation Lightsource
- Mar 2021 – present **National Meeting Organization**
- Co-organizing symposium of “*Undergraduate Research in Geochemistry*”, Division of Geochemistry, American Chemical Society Spring Meeting, Indianapolis, IN & Virtual, March 26-30, **2023**
 - Co-organizing symposium of “*Undergraduate Research in Geochemistry*”, Division of Geochemistry, American Chemical Society Spring Meeting, San Diego, CA & Virtual, March 20-24, **2022**
 - Co-organizing symposium of “*Fundamental Reactions Driving Macroscopic Geochemical Processes*”, Division of Geochemistry, American Chemical Society Spring Meeting, Virtual, April 5-16, **2021**
- Feb 2019 – present **Manuscript Reviewer**
- ACS Earth and Space Chemistry; ACS Omega; C – Journal of Carbon Research; Chemosphere; Crystals; Environmental Science: Nano; International Journal of Environmental Research and Public Health; Journal of Colloid and Interface Science; Journal of Composites Science; JOM (Journal of the Minerals, Metals, and Materials Society); Journal of Physical Chemistry; Langmuir; Materials; Molecules; PLOS One; Polymers; Processes; Separations; Sustainability; Toxics; Water*
- Oct 2015-present **Professional Society Memberships**
- American Chemical Society (Oct 2015 – present)
 - European Association of Geochemistry (May 2023 - present)
 - Clay Mineral Society (May 2018 – Apr 2019)
 - Geological Society of America (Aug 2019 – Dec 2022)

RESEARCH SKILLS AND TECHNIQUES

- Wet chemistry analysis
- X-ray crystal truncation rod (CTR) diffraction and resonant anomalous X-ray reflectivity (RAXR)
- X-ray atomic pair distribution function (PDF) analysis and powder X-ray diffraction (PXRD)
- Extended X-ray absorption fine structure (EXAFS) spectroscopy and X-ray absorption near edge structure (XANES) spectroscopy
- Atomic force microscopy (AFM), scanning electron microscopy (SEM), and transmission electron microscopy (TEM)

- Transmission X-ray microscopy (TXM) and X-ray computed tomography (XCT)
- MATLAB & Python programming languages
- Computer-aided design (CAD)

AWARDS & HONORS

- 2023 Argonne Core Value Shout-Out for Impact, Argonne National Laboratory
- 2023 Sigma Xi Full Membership Nomination
- 2021 Early Career Scientist Travel Award, American Chemical Society
- 2020 Impact Argonne Award for Extraordinary Effort, Argonne National Laboratory
- 2020 Argonne Core Value Shout-Out for Safety, Argonne National Laboratory
- 2018 NSF Student Travel Award, Clay Mineral Society
- 2018 Student Travel Award, American Chemical Society
- 2018, 17, 16 Graduate Student Travel Award, University of Wyoming
- 2012 Excellent Master Thesis Award, Dalian University of Technology, China
- 2011 2nd Runner-Up of Oral Presentation, Forum of Chemistry, Graduate University of Chinese Academy of Sciences, China
- 2011 Excellent Graduate Award, Dalian University of Technology, China
- 2011 Winner of Yantai Wanhua Scholarship, Dalian University of Technology, China
- 2009, 06 Excellent Graduate Award, Shenyang Agricultural University, China
- 2008 Outstanding Grade Award, Shenyang Agricultural University, China
- 2006 Third-Class Scholarship, Shenyang Agricultural University, China

REFERENCES

- Paul A. Fenter, Ph.D.
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- Andrew G. Stack, Ph.D.
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- Jacquelyn N. Bracco, Ph.D.

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