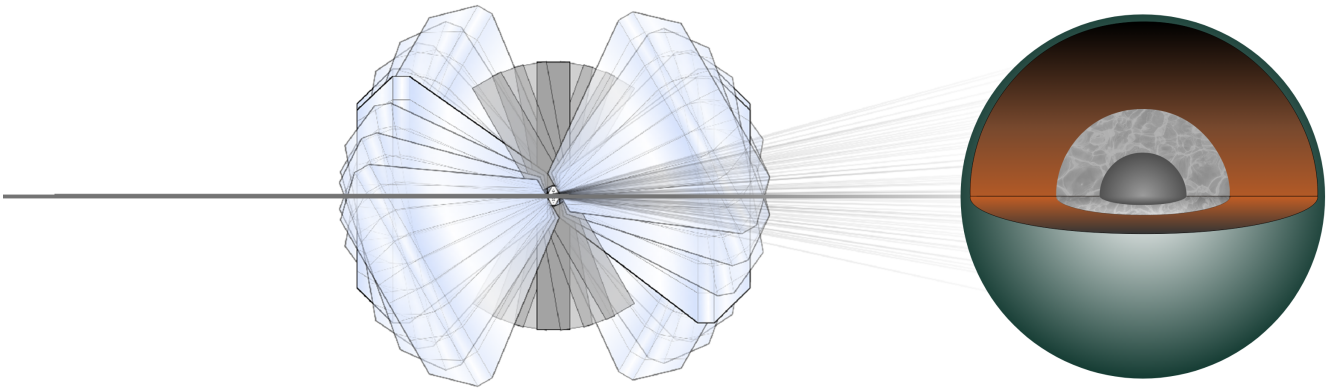

Claire Zurkowski

Affiliation and Contact

Postdoctoral Scholar
High Pressure Physics
Lawrence Livermore National Laboratory
7000 East Ave., Livermore, CA 94550-9234

Visiting Scientist
Earth and Planets Laboratory
Carnegie Institution for Science
5241 Broad Branch Road, NW
Washington, DC 20015-1305

czurkowski@carnegiescience.edu
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Education

2021 **The University of Chicago**, Chicago, IL
Ph.D., Geophysical Sciences

2016 **San Francisco State University**, San Francisco, CA
B.S., Geology

Professional Experience

2022 - present **Postdoctoral Scholar**
High Pressure Physics, Lawrence Livermore National Labtoratory, working with Zsolt Jenei.

2022 - present **Visiting Scientist**
Earth and Planets Laboratory, Carnegie Institution for Science, working with Yingwei Fei.

2021 - 2022 **Postdoctoral Fellow**
Earth and Planets Laboratory, Carnegie Institution for Science, working with Yingwei Fei.

Research Interests

I am a mineral physicist studying the chemistry and thermodynamics of Earth and exoplanetary deep interiors. In my experiments, I synthesize multi-crystal samples in the laser-heated diamond anvil cell up to multi-megbar pressures. At these conditions, I combine synchrotron powder and single-crystal X-ray diffraction techniques to obtain in-depth structural and chemical details of planetary petrologies.

Publications

Zurkowski C. C., Yang J., Chariton S., Prakapenka V. B., and Fei Y. Synthesis and stability of an eight-coordinated Fe_3O_4 high-pressure phase: Implications for the mantle structure of super-Earths. *Journal of Geophysical Research: Planets, 127*, e2022JE007344. *Special Section: *Exoplanets: The Nexus of Astronomy and Geoscience*. DOI

Zurkowski C. C., Lavina B., Case A., Swadba K., Chariton S., Prakapenka V.B., and Campbell A.J. (2022) Fe_5S_2 identified as a host for sulfur in Earth and planetary cores. *Earth and Planetary Science Letters, 593*, 117650. DOI

Zurkowski C. C., Lavina B., Chariton S., Prakapenka V.B., and Campbell A.J. (2022) Stability of Fe_2S and $Fe_{12}S_7$ to 125 GPa– implications for S-rich planetary cores. *Geochemical Perspectives Letters, 21*, 47 - 52. DOI

Zurkowski C. C., Lavina B., Brauser N. M., Davis A. H., Chariton S., Tkachev S., Greenberg E., Prakapenka V. B., and Campbell A. J. Pressure-induced *C*23-*C*37 transition and compression behavior of orthorhombic Fe_2S to Earth's core pressures and high temperatures. *American Mineralogist, in press.* DOI

Zurkowski C. C., Lavina B., Chariton S., Greenberg E., Prakapenka V.B., and Campbell A.J. (2021) The crystal structure of Fe_2S at 90 GPa based on single-crystal X-ray diffraction techniques. *American Mineralogist: Journal of Earth and Planetary Materials, 107*, 739-743. DOI

Zurkowski C. C., Lavina B., Chariton S., Greenberg E., Tkachev S. N., Prakapenka, V.B., and Campbell A. J. (2020) The novel high-pressure/high-temperature compound $Co_{12}P_7$ determined from synchrotron data. *Acta Crystallographica E76*, 1665-1668. DOI

Submitted Publications

Zurkowski C. C., Lavina B.,Prissel K., Chariton, S., Prakapenka V. B., and Fei Y. Structure and titanium distribution of feiite characterized using synchrotron single-crystal X-ray diffraction techniques. Submitted to *American Mineralogist.*

Scholarships and Awards

2021	Advances in synchrotron-based research towards understanding the structure, evolution, and dynamics of Earth and planetary interiors workshop postdoc participation award, Advanced Photon Source
2020	Arts, Science + Culture Initiative graduate collaboration grant awarded
2019	Student Presentation Award, COMPRES Annual Meeting
2018	Student Presentation Award, COMPRES Annual Meeting
2018–2021	NSF Graduate Research Fellowship
2017	Outstanding Student Paper Award, Mineral and Rock Physics, AGU Fall Meeting
2016–2021	McCormick Fellowship, University of Chicago
2016	Department Honoree, San Francisco State University's Geology Department
2016	Summa Cum Laude, San Francisco State University
2013–2016	Dean's List San Francisco State University
2013	Presidential Scholarship, Pratt Institute
2013	Valedictorian, The John Carroll School
2013	Judith Resnick Scholarship for Women in the Math and Sciences

2013 William J. Sacco Scholarship for Applied Mathematics
2013 Math, Physics and Art Student of the Year, The John Carroll School

Invited Seminars and Teaching Lectures

2022 **Lorentz Center, Diversity of Rocky Exoplanets 2022**,
Exoplanetary mineralogy and advances in experimental tools to probe exoplanetary deep interiors

2022 **Lawrence Livermore National Laboratory, High-Pressure Physics Group**,
Crystallography at the extremes: Insights into Earth and exoplanetary deep interiors"

2021 **Carnegie Institution for Science, Experimental Petrology and Mineral Physics Group**,
High P-T multigrain synthesis and the importance of powder and single crystal X-ray diffraction techniques

2021 **Carnegie Institution for Science**, Experimental Petrology and Mineral Physics Group,
Investigating the structural properties of Fe-rich sulfides to Earth's core pressures and high temperatures

Conference Presentations

Zurkowski C.C., Yang J., Chariton S., Prakapenka V.B., and Fei Y. Synthesis of an eight-coordinated Fe_3O_4 high-pressure phase: Implications for the mantle structure of super-Earths, presented at the 2022 *Lorentz Center Workshop: Diversity of Rocky Exoplanets*, Leiden, 5-9 Sep. (Poster Presentation)

Zurkowski C.C., Lavina, B., Yang J., Chariton S., Tkachev, S., Prakapenka V.B., and Fei Y. Crystal structure of feiite determined by single-crystal X-ray diffraction, presented at 2022 meeting, *IMA*, Lyon, 18-22 Jul. (Oral Presentation, given by Yingwei Fei)

Zurkowski C.C., Yang J., Chariton S., Prakapenka V.B., and Fei Y. Synthesis of an eight-coordinated Fe_3O_4 high-pressure phase: Implications for the mantle structure of super-Earths, presented at 2022 meeting, *ISoC*, Erice, 3-11 Jun. (Poster Presentation)

Zurkowski C.C., Yang J., Chariton S., Prakapenka V.B., and Fei Y. Synthesis of an eight-coordinated Fe_3O_4 high-pressure phase: Implications for the mantle structure of super-Earths, Abstract 1459 presented at 2022 meeting, *LPSC*, 7-11 Mar. (Poster Presentation)

Zurkowski, C.C., Swabda, K., Case, A., Lavina, B., Chariton, S., Greenberg E., Prakapenka V.B., and Campbell A.J. (2021) Synthesis and characterization of a new complex iron sulfide at Earth's outer core conditions. Abstract DI35D-0062 presented at 2021 meeting, *AGU*, Dec. 15 (Poster Presentation)

Zurkowski, C.C., Lavina, B., Chariton, S., Greenberg E., Prakapenka V.B., and Campbell A.J. (2020) Phase stability and structural properties of Fe_2S and its analog Co_2P at high pressures and temperatures. Abstract EGU21-1862 presented at 2021 meeting, EGU, 26 Apr. (Oral Presentation)

Zurkowski, C.C., Lavina, B., Chariton, S., Greenberg E., Prakapenka V.B., and Campbell A.J. (2020) Phase stability and structural properties of Fe_2S and its analog Co_2P at high

pressures and temperatures. Abstract MR024-05 presented at 2020 meeting, AGU, 1-17 Dec. (Oral Presentation)

Zurkowski, C.C., Davis,A.H., Chariton, S., Greenberg, E., Prakapenka, V.B. and Campbell, A.J. (2020) A hexagonal Fe_3S phase at Earth's core conditions. Abstract. COMPRES Annual Meeting (Oral Presentation)

Zurkowski, C.C., Brauser, N.M., Greenberg, E., Prakapenka, V.B. and Campbell, A.J. (2019) Phase stability and thermal equations of state of Fe_3S and Fe_2S polymorphs to Earth's core pressures and high temperatures. Abstract Dl13A-05 presented at 2019 meeting, *AGU*, Washington, D.C., 9-13 Dec. (Oral Presentation)

Zurkowski, C.C., Brauser, N.M., Greenberg, E., Prakapenka, V.B. and Campbell, A.J. (2019) Phase stability and thermal equations of state of Fe_3S and Fe_2S polymorphs to Earth's core pressures and high temperatures. Abstract. COMPRES Annual Meeting (Poster Presentation)

Zurkowski, C.C., Chidester, B.A., Greenberg, E., Prakapenka, V.B. and Campbell, A.J. (2018). Phase relations in the Fe–S–O system to Earth and planetary core conditions. Abstract MR42A-02 presented at 2018 meeting, *AGU*, Washington, D.C., 10-14 Dec. (Oral Presentation)

Zurkowski, C.C., Chidester, B.A., Greenberg, E., Prakapenka, V.B. and Campbell, A.J. (2018). Stability of the high pressure phase $Fe_3(S,O)_2$ to Earth and planetary core conditions in the Fe–S–O system Abstract. *COMPRES Annual Meeting*. (Oral Presentation).

Zurkowski, C.C., Chidester, B.A., Greenberg, E., Prakapenka, V.B. and Campbell, A.J. (2018). Stability of the high pressure phase $Fe_3(S,O)_2$ to Earth and planetary core conditions in the Fe–S–O system. Abstract. *COMPRES Annual Meeting*. (Poster Presentation).

Zurkowski, C.C., Chidester, B.A., Davis, A.H., Brauser, N.M., Greenberg, E., Prakapenka, V.B. and Campbell, A.J. (2017). Stability of the high pressure phases Fe_3S_2 and Fe_2S to Earth's core pressures in the Fe–S–O and Fe–S–O–Si systems. Abstract MR54A-07 presented at 2017 meeting, *AGU*, New Orleans, Louisiana, 10-15 Dec. (Oral Presentation).

Brennan, M, **Zurkowski, C.C.**, Chidester, B.A., Campbell, A.J. (2017) Deep-Earth equilibration between molten iron and solid silicates. Abstract MR43C-0483 presented at 2017 meeting, *AGU*, New Orleans, Louisiana, 10-15 Dec. (Poster Presentation).

Zurkowski, C.C., Chidester, B.A., Davis, A.H., Brauser, N.M., Greenberg, E., Prakapenka, V.B. and Campbell, A.J. (2017) Stability of the high pressure phase Fe_3S_2 up to 175 GPa in the Fe–S–O system. Abstract. *COMPRES Annual Meeting*. (Poster Presentation)

Additional Scholarship Experiences

2022 **International School of Crystallography**
The future is extreme and very bright summer school

2022 **Lorentz Center Workshops**
Diversity of Rocky Exoplanets, invited

Mentorship of Undergraduate Students

2020-2021 **Abigail Case**
Project: Single-crystal equations of state of Fe_3P and Fe_3S

Additional Professional and Teaching Experiences

Jan-20–Mar 20 **Teaching Assistant**, University of Chicago Department of Geophysical Sciences
Natural Hazards

Jan-19–Mar 19 **Teaching Assistant**, University of Chicago Department of Geophysical Sciences
Mineralogy

Jan-18–Mar 18 **Teaching Assistant**, University of Chicago Department of Geophysical Sciences
Natural Hazards

Jan-17–Mar 17 **Teaching Assistant**, University of Chicago Department of Geophysical Sciences
Earth as a Planet

May-18–present **Laboratory of Mineral Physics**, University of Chicago
PhD candidate
Advisor: Dr. Andrew Campbell

Sep-16–May-18 **Laboratory of Mineral Physics**, University of Chicago
Graduate Student
Advisor: Dr. Andrew Campbell

Jul-16–Sep-16 **Laboratory of Mineral Physics**, University of Chicago
Visiting Student
Advisor: Dr. Andrew Campbell

Jan-15–Jun-16 **High Temperature Geochemistry Research Group**, San Francisco State University
Geochemistry Field and Research Assistant
Advisor: Dr. Mary Leech

Jan-15–Jun-15 **United States Geological Society**, Menlo Park
Geophysics Research Assistant
Advisor: Dr. Walter Mooney

Jan-14–Jan-15 **The Isotope Geochemistry Laboratory**, University of Maryland
Geochemistry Research Assistant
Advisors: Dr. Roberta Rudnick and Dr. William McDonough

Relevant Graduate Coursework

Winter 2020 **Mineral Science**
Grade: A

Winter 2018 **Topics in Planetary Science**
Grade: A

Autumn 2017 **Cosmochemistry**
Grade: A

Autumn 2017 **Thermodynamics and Phase Change**
Grade: A

Spring 2017 **Introduction to Mathematical Methods in Physics**
Grade: A

Spring 2017 **Physics of the Earth**
Grade: A

Winter 2017 **Origin and Evolution of the Solar System**
Grade: A-

Winter 2017 **Mineral Physics**
Grade: A

Winter 2017	**Introduction to Mineralogy** Grade: Audited
Autumn 2016	**Geochronology** Grade: A
Autumn 2016	**Introduction to Research in the Geophysical Sciences** Grade: A

Outreach

2022	**Carnegie Trustee Meeting** Poster session presenter
2022	**American Geophysical Union Fall Meeting** Session chair convener
2021	**Advanced Photon Source High-Pressure Workshop** Crystallography session chair
2020	**UChicago Department of the Physical Sciences Conduct Committee** Committee member
2020	**Notre** Art-science interview
2020	**Space Us** Art-science interview
2019	**UChicago News** Art-science interview
2019	**AGU Mineral and Rock Physics** Twitter account manager
2019	**ArtSciInitiative** Instagram account manager
2018	**COMPRES Student Planning Committee** Vice Chair
2019	**AGU Mineral and Rock Physics Planning Committee** Student Representative
2018	**COMPRES Student Planning Committee** Committee member
2018	**UChicago Women in Graduate Science Student Leadership Team** Geophysical sciences representative
2018	**UChicago Physical Sciences Division Dean's Student Advisory Committee** Geophysical sciences representative
2017	**Field Museum Outreach** Docent
2017	**Marillac Social Center** Math and science tutor
2016	**UChicago Lab Tours** Featured speaker and tour guide
2016	**Chicago Upward Bound Tutoring Program** Math and science tutor
2016	**Argonne National Lab's Hour of Code Initiativet** Classroom assistant at Peck Elementary School
2016	**Mentor Matching Engine Chicago** Mentor

11. September 2022