Claire Zurkowski

Affiliation and Contact

Postdoctoral Fellow
Earth and Planets Laboratory
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https://clairezurkowski.github.io/go/

Education

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

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

Research Interests

Combining powder and single-crystal X-ray diffraction techniques to explore the phase relations and crystal structures of materials relevant to Earth and planetary deep interiors.

Publications

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 E*76, 1665-1668. https://doi.org/10.1107/S2056989020012657

Publications in Press

Zurkowski C.C., Lavina B., Chariton S., Greenberg E., Prakapenka V.B., and Campbell A.J. The crystal structure of Fe_2S at 90 GPa based on single-crystal X-ray diffraction techniques. *American Mineralogist*, in press. https://doi.org/10.2138/am-2022-7973

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. https://doi.org/10.2138/am-2022-8187

Submitted Publications

Zurkowski C.C., Lavina B., Case A., Swadba K., Chariton S., Prakapenka V.B., and Campbell A.J. Fe_5S_2 identified as a host for sulfur in Earth and planetary cores. Submitted to *Nature Geoscience*. Preprint: https://doi.org/10.31223/X5H337

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

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

Invited Talks

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., 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 condi-

tions 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)

Professional Experience

Current	**Postdoctoral Research Associate**, Carnegie Institution for Science *working with Yingwei Fei*
Jan-19–Mar 19	**Teaching Assistant**, University of Chicago Department of Geophysical Sciences *Mineralogy*
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

Instrumentation Experience

Diamond anvil cell
symmetric, short symmetric, BX90
Diamonds
brilliant-type diamonds, boehler-almax-type diamonds and seats
Synchrotron radiated powder and single-crystal X-ray diffraction
Sector 13 ID-D and BM-D, GSECARS of the Advanced Photon Source, Argonne National Laboratory.
Multi-anvil press
8/3 large assembly at Fei's High Pressure Lab, Earth and Planets Laboratory, Carnegie Institution for Science
Chemical Analysis
TESCAN LYRA3 field-emission SEM and FIB at the University of Chicgao; FEI Helios PFIB G4, Zeiss Auriga SEM, JEOL JXA-8530F field emission EMPA at the Earth and Planets Laboratory, Carnegie Institution for Science

Outreach

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 Initiative** Classroom assistant at Peck Elementary School
2016	**Mentor Matching Engine Chicago** Mentor

Washington DC, 14 October 2021