

Benjamin T. Strozewski

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Research Interests

lower mantle structure and heterogeneity; volatile transport in earth's interior; crystal chemistry and sound velocities of hydrous phases and oxyhydroxides; mechanical and elastic properties of earth materials

Education

California Institute of Technology Pasadena, CA	Ph.D. candidate, geophysics Advisor: Jennifer M. Jackson	2022-present
	M.S. geophysics	2021
Washington University in St. Louis St. Louis, Missouri	B.A. Physics, <i>magna cum laude</i> minor: computer science Thesis: <i>Effect of Temperature on Mechanical Yield of Quartz as Measured by Nanoindentation</i> Advisor: Philip Skemer	2019

Skills and Techniques

Experimental

Panoramic (panDAC) and symmetric (DAC) diamond anvil cell preparation; powder x-ray diffraction (XRD); time-domain synchrotron Mössbauer spectroscopy (SMS); Nuclear resonant inelastic x-ray scattering (NRIXS); Analysis of synchrotron infrared spectroscopy (SIR) data; Nanoindentation

Data Analysis

Python – NumPy, Matplotlib, Pandas, Pytorch, sckit-learn, obspy
Software – MINUTI, CONUSS, PHOENIX, Dioptas, GSAS-II

Publications

Strozewski, B., Buchen, J., Sturhahn, W., Ishii, T., Ohira, I., Chariton, S., Liu, Z., Lavina, B., Zhao, J. Toellner, T.S., Jackson, J. M (2023) Equation of State and Spin Crossover of (Al,Fe)-bearing phase H. *Journal of Geophysical Research: Solid Earth*, 128, doi:10.1029/2022JB026291

Strozewski, B., Sly, M. K., Flores, K. M., & Skemer, P. (2021). Viscoplastic Rheology of α -quartz Investigated by Nanoindentation. *Journal of Geophysical Research: Solid Earth*, 126(9), doi:10.1029/2021JB022229

Conference Abstracts and Presentations

*talk

Strozewski, B., Buchen, J., Sturhahn, W., Ishii, T., Ohira, I., Chariton, S., Liu, Z., Lavina, B., Zhao, J. Toellner, T.S., Jackson, J. M. (2022). Hydrogen Bonding and Spin State of (Al,Fe)-bearing Phase H at High Pressure. AGU Fall Meeting, Chicago, IL.

Strozewski, B., Buchen, J., Sturhahn, W., Ishii, T., Ohira, I., Chariton, S., Liu, Z., Lavina, B., Zhao, J. Toellner, T.S., Jackson, J. M. (2022). Hydrogen Bonding and Spin State of (Al,Fe)-bearing Phase H at High Pressure. IUCr High-Pressure Workshop, Chicago, IL.

***Strozewski, B.**, Buchen, J., Sturhahn, W., Ishii, T., Ohira, I., Chariton, S., Lavina, B., Zhao, J. Toellner, T.S., Jackson, J. M (2022) Equation of State and Spin Crossover of (Al,Fe)-bearing phase H. Annual Meeting, COMPRES, online

Strozewski, B., Buchen, J., Sturhahn, W., Ishii, T., Ohira, I., Chariton, S., Lavina, B., Zhao, J. Toellner, T.S., Jackson, J. M (2020). Equation of State of Al-rich Phase δ -H: Behavior of Ferric Iron in a High-Pressure Oxyhydroxide. AGU Fall Meeting, online.

Sly, M., **Strozewski, B.**, Kranjc, K., Flores, K., & Skemer, P. A. (2017). Low Temperature Plastic Rheology of Olivine, Quartz, and Calcite from Micromechanical Experiments. AGU Fall Meeting, online.

Washington University in St. Louis Undergraduate Research Symposium Poster (2017): “Low temperature plasticity of Quartz as Determined by Nanoindentation”

User Facility Experience

Principal Investigator, General User Proposal #73956, 2021-2022
Sound velocities and spin state of Fe-bearing phase delta-H
Sector 3-IDD, Advanced Photon Source, IL

Principal Investigator, General User Proposal #71858 (Rapid Access) 2020-2021
Valence and spin state of Fe-bearing phase delta-H
Sector 3-IDD, Advanced Photon Source, IL

Principal Investigator, General User Proposal #306213 2020-2021
Hydrogen bond dynamics and spin transition in oxyhydroxides at high-pressures
Beamline 22-IR-1, NSLS-II, NY

Total time awarded: 75 shifts/600 hours

User, powder x-ray diffraction, Sector 12-2-2, Advanced Light Source, CA
User, powder x-ray diffraction, Sector 13-IDD, Advanced Photon Source, IL
User, X-ray Crystallography Facility, Beckman Institute, Caltech, CA

Teaching and Outreach

Instructor, Caltech Earthquake Fellows Program	Summer 2023
Teaching Assistant, <i>Introduction to Geophysics</i>	Winter 2023
Tutor, Caltech RISE Program	Fall 2022-present
Laurel Mountain Elementary Science Fair Judge	2021, 2022
Teaching Assistant, <i>Machine Learning in Geophysics</i>	Spring 2021, 2022
Teaching Assistant, <i>Physics I</i>	Fall 2017

Fellowships, Awards, and Honors

International Union of Crystallography Young and Early Career Scientists Award	Dec. 2022
Caltech First-Year Graduate Student Fellowship	2019-2020
NCAA postgraduate scholarship	2019
Arts and Sciences Council Student Researcher of the Week	2017
WashU Office of Undergraduate Research Summer Research Grant	2017

Academic Service and Workshops

Co-organizer, Seismological Laboratory Deep Earth Discussion Group	2021-2022
Member, Seismological Laboratory Seminar Series Organizing Committee	2021-2022
Attendee, Caltech Center for Comparative Planetary Evolution Kick-Off Workshop	2019