

# Matthew C. Brennan

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## Education

- 2017 – **Harvard University**  
Ph.D. candidate in Earth & Planetary Sciences
- 2013 – 2017 **University of Chicago**  
B.S. with Honors in Geophysical Sciences.  
B.S. in Environmental Sciences

## Research Positions

- 2017 – **Graduate student**  
Laboratory for Mineral Physics, Harvard University  
Advisor: Rebecca A. Fischer
- 2016 – **Synchrotron user**  
GSECARS, Advanced Photon Source, Argonne National Laboratory  
Beamline 12.2.2, Advanced Light Source, Berkley National Laboratory
- 2015 – 2017 **Undergraduate lab technician**  
Laboratory for Mineral Physics, University of Chicago  
Advisor: Andrew J. Campbell  
Thesis: “Molten Iron – Solid Silicate Interactions in Earth's Deep Interior”
- 2016 **Summer Undergraduate Laboratory Internships (SULI) researcher**  
Energy Systems Division, Argonne National Laboratory  
Advisor: May Wu  
Project: “Water Use for Power Generation in the United States”

## Presentations, Publications, and Proposals

- 2020 **“High pressure deformation and texturing of Fe–Ni–Si alloys”**  
Oral Presentation  
COMPRES Annual Meeting
- 2020 **“Core Formation and Geophysical Properties of Mars.”**  
Publication  
*Earth and Planetary Science Letters* (530), 115923
- 2019 **“Martian Core Formation: Implications from the Hf–W System.”**  
Poster Presentation  
Goldschmidt Conference

- 2019      **“Using Core Formation and Geophysical Modelling to Predict the Core Radius and Seismic Properties of Mars.”**  
 Oral Presentation  
 Lunar and Planetary Science Conference
- 2018      **“A Core Formation Model with Implications for the Properties of the Martian Interior.”**  
 Oral Presentation  
 American Geophysical Union Fall Meeting
- 2018      **“The Composition and Seismic Properties of the Martian Interior.”**  
 Oral Presentation  
 Goldschmidt Conference
- 2018      **“Mantle Melting Temperatures of the Earth and Mars”**  
 Synchrotron Proposal  
 GSECARS, Advanced Photon Source, University of Chicago
- 2017      **“Deep-Earth Partitioning between Molten Iron Alloys and Solid Silicates.”**  
 Poster Presentation  
 American Geophysical Union Fall Meeting

## Teaching

- Fall 2020      **Teaching Fellow for EPS 10 (A Brief History of the Earth)**  
 Fall 2019      **Teaching Fellow for EPS 142 (Mineralogy)**

## Honors and Awards

- 2019 –      **National Science Foundation Graduate Research Fellowship**  
 2019 –      **Associate Membership in Sigma Xi**  
 2017      **Departmental Honors in Geophysical Sciences**  
 University of Chicago
- 2014 – 2017      **Dean's List**  
 University of Chicago

## Service and Outreach

- 2020      **Student panelist**  
 COMPRES Annual Meeting
- 2020      **Journal reviewer**  
 Physics and Chemistry of Minerals
- 2020      **Science Education Partner**  
 Harvard Museum of Natural History
- 2018 –      **Museum volunteer trainer**  
 Harvard Museum of Natural History
- 2018 – 2019      **Graduate Outreach Chair**  
 Department of Earth & Planetary Sciences, Harvard University

- 2018        **Volunteer tutor (science & mathematics)**  
              Cambridge School Volunteers, Cambridge Public Schools
- 2017 –     **Laboratory Safety Officer**  
              Department of Environmental Health & Safety, Harvard University
- 2017 – 2018 **Gallery guide**  
              Harvard Museum of Natural History

## Skills

- Experiment    **Diamond Anvil Cell**  
                  (assembly, sample loading, ruby fluorescence, laser heating, Raman spectroscopy)
- Synchrotron X-ray Diffraction**  
                  (axial and radial geometries, beamline operation, diffraction pattern analysis)
- Scanning Electron Microscope**  
                  (focused ion beam, backscattered electron detector, EDS elemental analysis)
- Piston-cylinder Press**  
                  (stack assembly, hydraulic operation, thermocouple operation, sample recovery)
- Computation   **Programming**  
                  (MATLAB, Python, Mathematica, R, L<sup>A</sup>T<sub>E</sub>X, HTML)
- X-Ray Diffraction**  
                  (DIOPTAS, MAUD, BEARTEX, FIT2D, APEX3, Olex<sup>2</sup>)

## Professional Societies

- 2018 –        **Geological Society of America**
- 2017 –        **American Geophysical Union**
- 2017 –        **Geochemical Society**