Dr Joshua Shea

Department of Earth Sciences, University of Cambridge
Postdoctoral Research Associate

Cambridge, United Kingdom
joshuajshea@gmail.com

Research Experience

Postdoctoral Research Associate with Prof. Olivier Shorttle — Nov. 2023 – present
Department of Earth Sciences, University of Cambridge — United Kingdom

Postdoctoral Research Associate with Dr. Simon Hunt — Sep. 2022 – Nov. 2023
Department of Materials, University of Manchester — United Kingdom

Doctoral Candidate with Prof. Stephen Foley — Sep. 2019 – Sep. 2022
Department of Earth and Planetary Sciences, Macquarie University — Australia

Professional Expertise

Microscopy: SEM, EPMA, XRF, EBSD, Cathodoluminescence

Mass spectrometery: Solution-ICP-MS, LA-ICP-MS, LA-ICP-MS/MS, SIMS, ToF-SIMS.

Spectroscopy: Raman Spectroscopy, CHNS analyser.

Experimental apparatus: Gas-mixing furnace, Piston-cylinder and Multi-anvil apparatus

Proficient Programming Languages: Python, R, LaTeX

Education

Doctor of Philosophy in Earth and Planetary Sciences — 2022
Macquarie University — Australia

Master of Research in Earth and Planetary Sciences — 2018
Macquarie University — Australia

Bachelor of Science major Geology, minor Geography — 2016
Macquarie University — Australia

Teaching Experience

Demonstrator & Supervisor Earth Sciences, University of Cambridge — 2024 – present

- Teaching second, third, and fourth-year natural science courses (up to 30 students): igneous petrology, mantle processes, thermobarometry, and data science applications in Python.
- Weekly undergraduate supervisions for King's, Downing & Jesus College students covering igneous and metamorphic petrology.

Demonstrator Earth and Planetary Sciences, Macquarie University — 2017 – 2022

- **Introduction to Oceanography**, a first year course; and **Geology of Australia**, a second year course; demonstrated practicals, fieldwork, and marked assignments and exams.

Awards

A. H. Voisey Medal — 2024
New South Wales Division, Geological Society of Australia — Australia

- For significant contribution to the Earth Sciences in Australia by an early-career Earth scientist.

Industry Experience

Engineering Geologist Mar. 2019 - Sep. 2019 (7 months)
Pells Sullivan Meynink Sydney, Australia

Funding

Enhancing Research Culture EDI Summer Internship: PI £3,800 GBP
Wellcome Trust 2023

Geochronology of the eastern Australian leucitite suite: PI $15,000 AUD
National Argon Map, AuScope 2021

Deciphering the potassic magmas of eastern Australia: PI $10,000 AUD
Victorian Division, Geological Society of Australia 2020

Community Service

Early Career Geoscientist Advisory Panel (ECGAP) January 2024 - present
National division, Geological Society of Australia

General Committee Member October 2023 - present
New South Wales division, Geological Society of Australia

Postdoctoral Research Associate (PDRA) Forum Committee Member 2022 - 2023
Department of Materials, University of Manchester Manchester, United Kingdom

Academic Supervisor, High School Science Extension 2021
Narrabeen High School Sydney, Australia

Higher Degree Research Representative 2020 - 2021
School of Natural Sciences, Macquarie University Sydney, Australia

Professional Affiliations

The Geological Society of Australia: General member 2019 – present

The Geochemical Society: General member 2020 – present

European Geosciences Union: General member 2020 – present

The Geological Society of London: Fellow 2023 – present

Selected Recent Publications (3/11)

Summary: 76 citations since 2019 and a h-index of 5.

Ezad IS. **Shea JJ**, Foley SF. *2025*. Hydrous minerals are sinks for first row transition elements in the mantle: an experimental partitioning study. *Chemical Geology*.

Shea JJ, Hughes CE, Bindemann I, Blundy J, Brooker R, Botcharnikov R, Cartigny P, EIMF, Gaetani G, Kilgour G, Maclennan J, Monteleone B, Neave DA, Shorttle O. *2025*. Improving Precision and Reference Materials for Stable Carbon Isotope Analysis in Basaltic Glasses using Secondary Ion Mass Spectrometry. *Geostandards and Geoanalytical Research*.

Chen C, Förster MW, Ezad IS, **Shea JJ**, Shcheka SS, Jacob DE, Foley SF. *2025*. Sulfide-rich continental roots at cratonic margins formed by carbonated melts. *Nature*, 637, 615–621.