Stanford

Dale Burns

Laboratory Manager Microanalysis Facility, Stanford Doerr School of Sustainability - Dean's Office

Bio

BIO

I am a staff research scientist and lecturer in the Stanford Doerr School of Sustainability. My primary responsibilities include managing both the day-to-day and long-term operations of the Stanford Microchemical Analysis Facility (MAF). I also have an active research program that includes projects in multiple scientific disciplines, and I teach multiple Stanford courses including courses at both the undergraduate- and graduate-levels.

In addition to my position at Stanford, I am the Treasurer of the Microanalysis Society, hold a courtesy faculty position at Oregon State University, and serve as a technical director for the National Nanotechnology Coordinated Infrastructure program.

EDUCATION AND CERTIFICATIONS

- Ph.D., Oregon State University , Geochemistry
- M.S., San Diego State University , Geological Sciences
- B.A., Humboldt State University , Geological Sciences

Teaching

COURSES

2025-26

- An Introduction to Quantitative X-ray Microanalysis: EPS 216, MATSCI 236 (Spr)

2024-25

- Introduction to Igneous and Metamorphic Petrology: EPS 104 (Spr)

2023-24

- An Introduction to Quantitative X-ray Microanalysis: EPS 216, GEOPHYS 236, MATSCI 236 (Spr)
- Introduction to Igneous and Metamorphic Petrology: EPS 104 (Spr)

Professional

PROFESSIONAL AFFILIATIONS AND ACTIVITIES

- Technical Director, National Nanotechnology Coordinated Infrastructure program (NSF) (2018 - present)
- Professor (courtesy), Oregon State University (2022 - present)
- Treasurer, Microanalysis Society (2025 - present)

Publications

PUBLICATIONS

- **Inferences of Source Lithologies for Chicxulub Microtektites Using a Bayesian Approach** *GEOCHEMISTRY GEOPHYSICS GEOSYSTEMS*
  Carter, J., Sanchez, P., Fuentes, A. J., Renne, P. R., Burns, D. H., Bermudez, H. D.
  2025; 26 (3)

- **Effusive volcanic microcosm of a regional ignimbrite flare-up: Prolonged life cycle of the Chaxas Complex, northern Chile, and its influence on modern volcanic arc character** *GEOLOGICAL SOCIETY OF AMERICA BULLETIN*
  Lewis, C., de Silva, S., Leon, A., Burns, D., Villarroel, M.
  2025

- **Melt Flux from the Mantle Regulates the Crustal Processing and δ¹⁸O Variations of Kama'ehuakanaloa Magmas** *JOURNAL OF PETROLOGY*
  Pietruszka, A. J., Cunningham, M. J., Bindeman, I. N., Garcia, M. O., Boro, J. R., Burns, D. H., Jiang, P.
  2025; 66 (1)

- **Heart cockle shells transmit sunlight to photosymbiotic algae using bundled fiber optic cables and condensing lenses.** *Nature communications*
  McCoy, D. E., Burns, D. H., Klopfer, E., Herndon, L. K., Ogunlade, B., Dionne, J. A., Johnsen, S.
  2024; 15 (1): 9445

- **Assessing lunar paleointensity variability during the 3.9-3.5 Ga high field epoch** *EARTH AND PLANETARY SCIENCE LETTERS*
  Jung, J., Tikoo, S. M., Burns, D., Vaci, Z., Krawczynski, M. J.
  2024; 638

- **The Presence and Composition of Mn-rich Chondrule Rims in CO3 Chondrites.** *Microscopy and microanalysis : the official journal of Microscopy Society of America, Microbeam Analysis Society, Microscopical Society of Canada*
  Kirk, J., Hyseni, P., Jorge-Chavez, F., Mendoza, V., Burns, D., Simon, S., Telus, M.
  2023; 29 (Supplement_1): 857-859

- **Significance of Secondary Fe-Oxide and Fe-Sulfide Minerals in Upper Peak Ring Suevite from the Chicxulub Impact Structure** *MINERALS*
  Verhagen, C. M., Jung, J., Tikoo, S. M., Wittmann, A., Kring, D. A., Brachfeld, S., Wu, L., Burns, D. H., Gulick, S. P. S.
  2023; 13 (3)

- **Andesites and evolution of the continental crust: Perspectives from the Central Volcanic Zone of the Andes** *FRONTIERS IN EARTH SCIENCE*
  Burns, D. H. H., de Silva, S. L. L.
  2023; 10

- **Rhyolitic melt production in the midst of a continental arc Hare-up-The heterogeneous Caspana ignimbrite of the Altiplano-Puna volcanic complex of the Central Andes** *GEOSPHERE*
  Lewis, C. T., de Silva, S. L., Burns, D. H.
  2022; 18 (6): 1679-1709

- **Comparison of temperature and doping dependence of elastoresistivity near a putative nematic quantum critical point.** *Nature communications*
  Palmstrom, J. C., Walmsley, P., Straquadine, J. A., Sorensen, M. E., Hannahs, S. T., Burns, D. H., Fisher, I. R.
  2022; 13 (1): 1011

- **Crustal Forensics at Putauaki (Mt. Edgecumbe), New Zealand reveal the influence of deep crustal arc processes on magma evolution in the Taupo Volcanic Zone** *CONTRIBUTIONS TO MINERALOGY AND PETROLOGY*
  Burns, D. H., de Silva, S. L., Shane, P., Coble, M. A.
  2022; 177 (1)

- **Chasing the mantle: Deciphering cryptic mantle signals through Earth's thickest continental magmatic arc** *EARTH AND PLANETARY SCIENCE LETTERS*
  Burns, D. H., de Silva, S. L., Tepley, F. J., Schmitt, A. K.
  2020; 531

- **Trace Element Characterisation of MAD#559 Zircon Reference Material for Ion Microprobe Analysis** *Geostandards and Geoanalytical Research*
  Coble, M. A., Vazquez, J. A., Barth, A. B., Wooden, J., Burns, D., Kylander-Clark, A., Jackson, S., Vennari, C. E.
  2018

- **Hadean zircon from a 3.3 Ga sandstone, Barberton greenstone belt, South Africa** *GEOLOGY*
  Byerly, B. L., Lowe, D. R., Drabon, N., Byerly, G. R.
  2018

- **Recording the transition from flare-up to steady-state arc magmatism at the Purico-Chascon volcanic complex, northern Chile** *EARTH AND PLANETARY SCIENCE LETTERS*
  Burns, D. H., de Silva, S. L., Tepley, F., Schmitt, A. K., Loewen, M. W.
  2015; 422: 75-86

- **Chemical heterogeneity in the Hawaiian mantle plume from the alteration and dehydration of recycled oceanic crust** *EARTH AND PLANETARY SCIENCE LETTERS*
  Pietruszka, A. J., Norman, M. D., Garcia, M. O., Marske, J. P., Burns, D. H.
  2013; 361: 298-309