

Postdoctoral Positions available in Fluid-Rock Interactions and Investigation of Deep Subsurface Life - Stable Isotope Laboratory, University of Toronto

See lab website www.bsherwoodlollar.weebly.com

With implications from deep subsurface biodiversity, the habitability of Earth, Mars and the icy moons, the competing use of the Earth's subsurface for water resources, materials to fuel the energy transition, and potential sites for waste disposal, CCS or hydrogen storage, **Subsurface Science and Exploration** is a topical theme with a wealth of fundamental research questions. One or more postdoctoral positions are available for research projects on the origin, residence times and geochemical signatures of deep crustal fluids and the subsurface microbial communities that are sustained by water-rock reactions in the deep Earth. Field, laboratory and modelling opportunities are available to extend the existing program to explore the implications of our work on Earth analogs to the search for life on the rocky bodies and ocean worlds of our solar system. A particular recruitment focus at the present time is for those with interest and skills in surface and micro-analysis of mineral surfaces and/or fluid inclusions to investigate the evidence of water-rock reaction from the rocks and minerals themselves, to complement team members already focusing on fluids and dissolved gases.

Applicants with a PhD in geochemistry, geobiology, hydrogeology, chemistry, microbiology, planetary sciences or related disciplines are all encouraged to apply.

Recent Team Publications:

Sherwood Lollar, B., Warr, O., Higgins, P.M. (2024) The Hidden Hydrogeosphere – An expanded vision of the planetary water cycle. **Annual Reviews of Earth and Planetary Sciences** 52:15.1-15.24.
<https://doi.org/10.1146/annurev-earth-040722-102252>.

Nissan, D., Kieft, T., Drake, H., Warr, O., Sherwood Lollar, B., Ogasawara, H., Perl, S., Freifeld, B., Castillo, J., Whitehouse, M., Kooijman, E. and Onstott, T.C. (2023) Hydrogeochemical and isotopic signatures elucidate deep subsurface hypersaline brine formation through radiolysis driven water-rock interaction. **Geochimica Cosmochimica acta** 340:65-84.

Cheng, A., Sherwood Lollar, B., Gluyas, J. and Ballentine, C.J. (2023) Primary N₂-He gas field formation in intracratonic sedimentary basins. **Nature** 615:94-99. [Doi.org/10.1038/s41586-022-05659-0](https://doi.org/10.1038/s41586-022-05659-0).

Warr, O., Smith, N., and Sherwood Lollar, B. (2023) Hydrogeochronology: resetting the time-stamp for subsurface groundwaters. **Geochimica Cosmochimica acta** 348:221-238.

Warr, O. Ballentine, C.J., Onstott, T.C., Nissan, D.M., Kieft, T.L., Hillebrands, D.J. and Sherwood Lollar, B. (2022) ⁸⁶Kr excess and other noble gases identify a billion-year old radiogenically-rich groundwater system. **Nature Communications** 13(1):3768-3768 [DOI: 10.1038/s41467-022-31412-2](https://doi.org/10.1038/s41467-022-31412-2)

Applicants please send a detailed CV, statement of research interests and potential fit to the team, along with 3 letters of recommendation directly to:

Dr. B. Sherwood Lollar
Dept. of Earth Sciences, University of Toronto
22 Ursula Franklin Street Toronto, Ontario M5S 3B1 Canada
Email: barbara.sherwoodlollar@utoronto.ca

Due Date: Position is open immediately and will remain open until the position(s) are filled.

If there is room for photos associated with the ad please use one or more of the attached

