Seminar

ANNA NEUBECK

Natural Sciences Fellow, SCAS.
Associate Professor of Geochemistry (Mineralogy, Petrology and Tectonics),
Uppsala University

The Search for Signatures of Life - Investigating the Geological Archives

Tuesday, 10 November 2020, 2:15 p.m.

Due to the precautions imposed by the current Corona pandemic, the Thunberg Hall will be closed to the public until further notice.

You are therefore invited to join the seminar via Zoom instead:
https://uu-se.zoom.us/j/64792826910

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About Anna Neubeck

Anna Neubeck is Associate Professor at the Department of Earth Sciences, Uppsala University. Her work is highly interdisciplinary, covering subjects such as prebiotic chemistry, microbiology, geochemistry, petrology, palaeobiology and applied geology. She holds a PhD in Geochemistry from the Astrobiology Graduate School at Stockholm University. She has a vocational degree in graphic design from Pekka Halonen Academy in Finland and has a broad interest in art and research, which is evident through her exhibited artwork on microscopy photography. Her research is mainly in the field of isotope geochemistry, but she has also worked on petrology, microbiology and applied geology.

Neubeck has published several articles in high-ranking international journals, such as the *Journal of Petrology* and *PLOS One*, and is a leading editor of a Springer book on prebiotic chemistry. She received a Crafoord Stipend in 2018 and is currently externally funded by The Swedish Research Council for research on nickel isotopes. She is a member of SRS, the Swedish Space Researchers Cooperation Group, and PI for a research group working on microbe-mineral interaction in lava caves as an analog to Martian environments.

At SCAS, Neubeck will work on nickel as a catalyst for synthesis of organic compounds in space.

Abstract

Identifying fossilized microorganisms in the geologic record involves detailed analyses of micrometer-scale features in samples, and the ability to differentiate between biological and abiotic origins of often cryptic signatures. Investigations involving the analysis of fossilized microorganisms may be of high scientific impact, such as those concerning the earliest traces of life on Earth, the extent of the deep subsurface biosphere, and potentially in fossilized life to be discovered within returned extraterrestrial samples. The deep subsurface biosphere represents environments without oxygen and with low supply of nutrients, that are considered to be analogous to environments on early Earth or other extraterrestrial bodies. Because of the challenges and potential consequences of identifying actual microfossil samples on Earth and beyond, new methods are sought to push the boundaries of how ancient microbial remains are analyzed and interpreted. Biologically-essential transition metal isotopes have recently gained increased interest as potential biosignatures. Of particular interest, especially in the context of subsurface microbial life and within environments involving water-rock-microbial interactions, is Ni, which has been suggested as a biosignature.