

Minerals, Plumes, and Microbial Interactions

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The mid-ocean ridge (MOR) system, ridge flanks, and other sites of deep-sea hydrothermal venting offer multitude of opportunity for microbial interactions with minerals, and with their biogeochemical environment. We are taking a systems approach to studying mineral-microbe interactions – from vent fluid processes, to plumes, hydrothermal sulfides, to basaltic rocks – towards understanding the mechanisms and microbial communities that underpin deep-sea biogeochemical processes. This work combines empirical analyses of field samples, and laboratory and field experimental approaches to studying the microbial biogeochemical transformation of deep-sea Earth materials. Specifically, the processes of microbiologically mediated mineral formation and mineral dissolution, the coeval occurrence of which can conceptually be considered biogeochemical alteration reactions. These processes will be discussed as they occur at rock and mineral surfaces, in hydrothermal plumes, and low-temperature hydrothermal fluids.

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