

Serpentinization... Microbial life in high pH fluids [1]

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After an hour long hike through rocky trails we arrived at GOR, one of our study sites in Northern Italy and sampled the high pH fluids for chemistry and microbiology.

Serpentization is the process in which the mineral olivine reacts with water and gets transformed to serpentinite. The process creates a high pH fluid enriched in electron donors and acceptors that can be used by microorganisms for food and energy source, although living in these serpentizing fluids represent challenges to the cell.

The mineral olivine is abundant in ultramafic rocks, rocks that are representative of the upper mantle. At Ophiolites these ultramafic rocks are uplifted and are exposed above sea level in continents. Thus, serpentization can occur at the sea floor, but also at these continental ophiolites.

Our lab studies serpentization processes at seafloor and at continents. The most common example of seafloor serpentization is that occurs at the Lost City Hydrothermal Field in the Mid Atlantic Ridge. On continents, we have different sites. I recently visited our study site in Northern Italy. It was an amazing experience. I frequently visit our main study site in the Coast Range Ophiolite, where we have a microbial observatory and a series of wells that we drilled to have access to the more pristine serpentizing fluid.

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