

Microbial roles on the formation of manganese deposits at Sambe hot spring

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Manganese oxides have various chemical characteristics. For instance, MnO_2 particle, already present, catalytically oxidizes Mn^{2+} to form new MnO_2 . Many geochemists have been attracted by oxidation reaction of manganese for a long-years, and many experimentations being related to manganese oxidation has operated. According to the result, biological manganese oxidation is generally fast relative to abiotic manganese oxidation process, including surface-catalyzed reactions. However, environmental and biological oxidation reaction of manganese is not understood enough to evaluate it. In the present study, Sambe hot spring, which is forming manganese oxides is researched. On the result of on-the-spot investigation, manganese oxide is formed along hot spring water stream. Following the course of the stream upward, iron oxides is observed at the upper area. A lot of algae is observed on manganese oxide surface, by the observation of CLSM. According to previous report, the bacteria being able to oxidize manganese are lively in the environment with algae.

On the result of genetic analysis, diatom is observed. This result supports biological manganese oxidation.