

## Formation of colloidal iron hydroxide by deep subsurface bacteria.

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Iron relating bacteria was isolated from the deep groundwaters of granitic rocks at the Tono area, central Japan. Iron-oxidizing/reducing bacteria were abundantly detected at the depths having the specific pH-Eh conditions corresponding to the ferrous/ferric interface. Cultures of the iron-oxidizing/reducing bacteria contained significant amount of colloidal particles. The particles were 1-10 micro meter across, and composed of iron hydroxide. This suggests that microorganisms contribute to the formation of iron colloids against iron deposits and to the transportation of colloidal iron forms by interstitial fluid flow in the deep subsurface biosphere.

Microorganisms that mediate the formation of iron hydroxide were isolated from the deep groundwaters of granitic rocks, maximum 840 m deep at the Tono area, central Japan. Iron-oxidizing/reducing bacteria were abundantly detected at the depths having the specific pH-Eh conditions corresponding to the ferrous/ferric interface. Cultures of the iron-oxidizing/reducing bacteria contained significant amount of colloidal particles. The particles were mostly spherical, 1-10 micro meter across, and composed of iron hydroxide according to the EDS analysis. This suggests that microorganisms contribute to the formation of iron colloids against iron deposits and to the transportation of colloidal iron forms by interstitial fluid flow in the deep subsurface biosphere. Microbial substances and processes to form colloidal iron hydroxide are to be studied.