

## **Microbial Synthesis and Characterization of Metal-Substituted Magnetites**

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The use of bacteria as novel means of producing mineral phases is in its infancy. Metal (Co, Cr, Ni)-substituted magnetite powder has been synthesized using iron(III)-reducing bacteria under anaerobic conditions. The microbially synthesized metal-substituted magnetite has diamond shape with lengths of 50 to 100 nm. X-ray powder diffraction was measured on these magnetite powder samples. Both the chemical analysis and Rietveld refinements of synchrotron x-ray powder data support that the metals were substituted into the magnetite structure. Microbial synthesis of the metal-substituted magnetite may play an important role in the possible use of the material for many industrial purposes.

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