



Study of biogenic iron oxides by neutron activation analysis and x-ray diffraction

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Abstract: Bacteria from the Sphaerotilus-Leptothrix group of the iron oxidizing bacteria contribute to the biogeochemical cycle of the iron that occurs in the lithosphere. It is a fundamental geological process of iron oxidation performed by microorganisms where iron first is mobilized, then it is used and assimilated by the bacteria and finally it is immobilized and deposited. The deposition of iron ions is extracellular in the form of biogenic products contained in tubular structures (sheaths). We report on the determination of the elemental constitution and the structure of biogenic iron oxides/(oxy) hydroxides resulting from the bacterial metabolism. The Fe(II)-oxidizing organism was isolated from freshwater wetland surface sediments in Vitosha Mountain.

Key words: sheath-forming bacteria, Leptothrix bacterium, biogenic iron oxides, PGAA, NAA