

Biomineralization of Fe, S in biofilms and outside observation of the biofilms by atomic-force microscopy

Naoya Sasaki[1], Kazue Tazaki[2]

[1] Natural Science and Tecnology., Kanazawa Univ, [2] Dept. Earth Sci., Kanazawa Univ.

Biofilms were experimentally formed on the surface of waste water, using biomats of Hirayu mine in Gifu Prefecture. Both optical and electron microscopy showed numerous microorganisms are involved in this biofilms and well-crystallized Goethite [FeO(OH)], Siderotil [FeSO₄5H₂O], Jarosite [KFe₃(SO₄)₂(OH)₆], and amorphous ferric hydroxysulfate. The experiments revealed that these minerals were formed by the microorganisms in a few days. Additionally atomic-force microscopy showed submicron rugged structure of the surface of the biofilms.