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Biomineralisation by Gallionella

Rolf Hallberg

Geology and Geochemistry, Stockholm University, Stockholm, S-106 91, Sweden

Though the *Gallionella ferruginea* was described already 1836 (Ehrenberg) it is according to literature (Ehrlich, 1990) still unknown by which mechanism and in which chemical or mineralogical form the iron is precipitated. It is usually referred to as a poorly ordered iron hydroxide (Hanert, 1971) amorphous ferric hydroxide deposited on the stalk (Ghiorse, 1984) or a structure quite different from that of known compounds of oxidized iron (Mardanyan and Balasheva, 1971). These forms are suggested to act in a successive transformation into an oxyhydroxide (FeOOH) like goethite. Earlier SEM micrographs from *Gallionella* have revealed a stalk of fibrous material with an iron precipitate without any crystallographic features. A new SEM technique (ESEM) at low vacuum (5 torr) and 99% humidity, where the sample never has been exposed to high vacuum and coating of carbon or gold, has revealed a new insight into the mineralization of iron by *Gallionella*, which is presented in this paper.

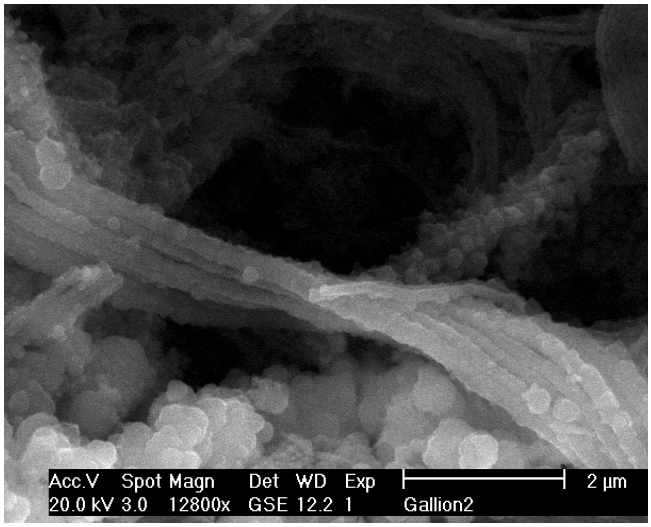

Figure 1: Hematite crystallites in and on stalks by Gallionella

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