Green Rust *versus* Magnetite precipitation during Antimony bearing Ferrihydrite Bioreduction

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Antimony (Sb) is a naturally occurring element and enriched in the environment by anthropogenic activities. Similar to other metal(loid) species, Sb partitions to mineral phases such as oxyhydroxides. However, these partitioning reactions may be affected by geochemical conditions. Under reducing environments, Fe(III) may serve as an terminal electron acceptor during dissimilatory iron reduction leading to its dissolution and/or transformation. Relatively little is known concerning the fate of Sb associated with Fe(III) oxyhydroxides with regards to microbiologically mediated redox reactions. To further our understanding, Sb^{v} bearing ferrihydrites with variable molar ratios ($Sb^{v}/(Fe^{III} + Sb^{v})$) were incubated in the presence of *Shewanella oneindensis* MR-1. A combination of wet chemistry and solid analysis techniques was used to characterize the reactions. During the bioreduction, a minor fraction of the total Sb was released in the solution indicating that the metal(loid) partitioned mainly in a newly formed phase. The only specie detected was Sb^{v} as shown by hybride generation coupled to atmoic fluorescence spectroscopy. The precipitation of magnetite and siderite was observed in the absence of Sb. On the other hand, carbonated green rust was the main secondary mineral regardless of the Sb content as evidenced by XRD, Mössbauer spectroscopy and Raman spectroscopy. Magnetometry measurements suggest that the presence of Sb drastically affects the magnetic signal of the biogenic mineral.