



FeS/water interface

The effect of organic matter on the rate of FeS oxidative dissolution

Iron monosulfide minerals (FeS) form in anoxic media at low concentration of the protons. By mining they are removed from the original settings and exposed to various oxidant species.^{1,2} The oxidative dissolution of FeS causes serious environmental problems, acid mine drainage (AMD) being the most dangerous. AMD includes sulfuric acid, ferric iron and toxic ions such as those of Cd, Hg, Cu, Mn and As.

Knowledge of the factors that influence the rate of FeS oxidative dissolution is a first step in the attempts to find the reaction mechanism and the effective strategies to abate the formation of AMD.

The main objective of this project is to investigate the effect of some organic compounds on the rate of FeS oxidative dissolution at relevant pH values and temperatures. The organic compounds selected for the experiments are found in nature or have a structure similar to natural compounds.

The oxidative dissolution will be examined by electrochemical experiments (Potentiodynamic Polarization, Electrochemical Impedance Spectroscopy etc). The initial/reacted FeS samples and resulted aqueous solutions will be analyzed by techniques like Fourier Transform Infrared Spectroscopy, Atomic Force Microscopy, UV-VIS Spectroscopy etc.

The project would last for 2 to 4 months, and its supervisor is Dr. Paul CHIRITA.

1. A. Ghahremaninezhad, E. Asselin, D.G. Dixon, *J. Electrochem. Soc.*, **2010**, 157, C248.

2. P. Chirita, M. Descostes, M.L. Schlegel, *J. Colloid Interface Sci.*, **2008**, 321, 84.

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