

The study of the effect of organic complexing agents of Fe(III) or Fe(II) on iron monosulfide oxidative dissolution

UEFISCDI

Project: 51/2012

Acronym: ECAFE

Coordinator: University of Craiova

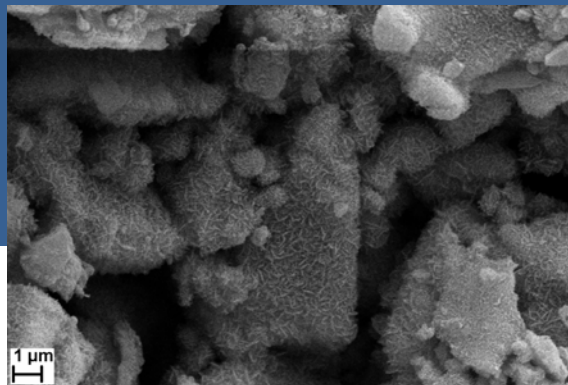
Partner 1: University "Al. Cuza" Iasi

Partner 2: National Institute of Materials Physics Bucharest

Strategy and objectives

The study is focused on two directions: a theoretical direction of fixing of the main aspects of FeS oxidative dissolution and, respectively, a practical direction, materialized by experimental studies, having as objectives achievement of our own results and their interpretation regarding to literature data.

The main purposes of this study are the accurate characterization of FeS oxidative dissolution process in presence of Fe(III) and Fe(II) complexing agents, determining the temporal evolution of some indicators of FeS oxidation degree (pH, Eh, total iron concentration, total dissolved sulfur concentration, change/corrosion current densities, charge transfer/polarization resistances, etc.), surface analysis of reacted mineral samples by X-ray diffraction (XRD), FTIR spectroscopy, Raman spectroscopy, Scanning Electron Microscopy and the selection of ligands having an adequate inhibition efficiency of FeS oxidative dissolution, in order to create effective strategies of the suppression of the environmental contamination.



Key persons

Project Manager:

Dr. Paul CHIRITA

Person in charge from Partner 1:

Dr. Mihail Lucian BIRSA

Person in charge from Partner 2:

Dr. Mihaela BAIBARAC

Total funding per years

2012: 230000 Lei

2013: 690000 Lei

2014: 869992 Lei

2015: 210008 Lei

Total: 2000000 Lei



Results

Papers

- 1) Lungu N.C., Sandu I., Chirita P., Birsa M.L., New water soluble 1,3-dithiolium salts, Rev. Chim. (Bucharest), in print, 2013.
- 2) Buhaceanu R., Lungu N.C., Forna N., Asaftei I.V., Chirita P., Birsa M.L., A new class of mesoionic 4-(1,3-dithiol-2-ylidene)phenolates, Rev. Chim. (Bucharest), in print, 2013.
- 3) Buhaceanu R., Lungu N.C., Forna N., Asaftei I.V., Chirita P., Birsa M.L., The influence of bromine substituent on optical properties of some 1,3-dithiolium derivatives, Rev. Chim. (Bucharest), in print, 2013.
- 4) P. Chirita, C.A. Constantin, M.L. Schlegel (2013) Effect of inorganic anions on FeS oxidative dissolution. Procedia Earth and Planetary Science 7 159–162. doi.org/10.1016/j.proeps.2013.03.062

Abstracts

- 1) C.E. Badica, P. Chirita (2013) The effect of 1,10-phenanthroline on the oxidative dissolution of iron monosulfide (FeS). Mineralogical Magazine (in press).
- 2) C.A. Constantin, P. Chirita, C.E. Badica, L. Birsa, E. Matei, I. Baltog, M.L. Schlegel (2013) The effect of some new organic inhibitors on the oxidative dissolution of iron monosulfide (FeS). Mineralogical Magazine (in press).

Conferences

- 1) Fourteenth International Symposium on Water-Rock Interaction, WRI 14 , Avignon, France, June 9-14, 2013
Effect of inorganic anions on FeS oxidative dissolution. P. Chirita, C.A. Constantin and M.L. Schlegel
- 2) Goldschmidt Conference 2013, August 25-30 2013, Florence, Italy
The Effect of 1,10-phenanthroline on the oxidative dissolution of iron monosulfide (FeS). C.E. Badica and P. Chirita
- 3) Goldschmidt Conference 2013, August 25-30 2013, Florence, Italy
The effect of some new organic inhibitors on the oxidative dissolution of iron monosulfide (FeS). C.A. Constantin, P. Chirita, C.E. Badica, L. Birsa, E. Matei, I. Baltog and M.L. Schlegel