



“Gheorghe Asachi” Technical University of Iasi, Romania



PYRITE SURFACE CORROSION ENHANCED BY ATTACHMENT OF *Acidithiobacillus ferrooxidans*: COMPARISON WITH ABIOTIC OXIDATION

Lei Jiang*, Huiqun Yang, Yuruo Tao, Jinyan Yang

School of Environmental Engineering, Wuhan Textile University, Wuhan, China

Abstract

Acidithiobacillus ferrooxidans plays an important role in the pyrite oxidation process and has been widely studied in order to determine the kinetics of the reactions, but the details of the oxidation processes on the surface of pyrite keeps poorly known. In this study, the bio-oxidation process of pyrite by *Acidithiobacillus ferrooxidans* was studied by comparing with abiotic oxidation by Fe^{3+} . The attachment of *Acidithiobacillus ferrooxidans* on pyrite surface was found by using Scanning Electron Microscope and Fluorescence Stereo Microscope. Analysis of the concentration of increased total iron ion suggested that the rate of bio-oxidation was higher than that of abiotic oxidation. Corrosion morphologies on bio-oxidized pyrite surface were deeper than that of abiotic oxidation. Especially, some corrosion holes on bio-oxidized pyrite surface were oriented and cell-shaped, and this indicated that pyrite biotic erosion should be closely related with attachment of bacteria on mineral surface.

Key words: *Acidithiobacillus ferrooxidans*, attachment, bio-oxidation, pyrite

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* Author to whom all correspondence should be addressed: e-mail: andy0920@163.com; Phone: +86 15207104639