Bioleaching of Chalcopyrite-bornite and Chalcopyrite-pyrite Mixed Ores in The Presence of Moderately Thermophilic Microorganisms

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In this work, bioleaching of chalcopyrite-pyrite and chalcopyrite-bornite mixed ores in the presence of moderately thermophilic microorganisms (A.caldus, L.ferriphilum and mixed culture) were carried out. Bioleaching results showed that bioleaching behaviors of chalcopyrite-pyrite and chalcopyrite-bornite mixed ores in the presence of these moderately thermophilic microorganisms were all in accordance with the proposed optimum redox potential theory. Results showed that high copper extraction was obtained in different bioleaching systems if the redox potential was between E_L to E_H. Real-time PCR technique was used to analyze the change of percentages of A.caldus and L.ferriphilum during bioleaching by mixed culture consisting of A.caldus and L.ferriphilum. Results showed that the change rules were similar between bioleaching system of sole chalcopyrite and two kinds mixed ores, indicating that the chemical factor instead of biological factor should be the main cause for the high copper extraction of chalcopyrite-pyrite and chalcopyrite-bornite mixed ores.

Keywords: Chalcopyrite; Pyrite; Bornite; Redox potential; Real-time PCR

FULL TEXT

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