

Accepted Manuscript

The anodic behaviour of chalcopyrite in chloride solutions:
Voltammetry

Michael Nicol, Hajime Miki, Suchun Zhang

PII: S0304-386X(17)30060-9
DOI: doi: [10.1016/j.hydromet.2017.05.016](https://doi.org/10.1016/j.hydromet.2017.05.016)
Reference: HYDROM 4582
To appear in: *Hydrometallurgy*
Received date: 24 January 2017
Revised date: 9 May 2017
Accepted date: 16 May 2017



Please cite this article as: Michael Nicol, Hajime Miki, Suchun Zhang , The anodic behaviour of chalcopyrite in chloride solutions: Voltammetry, *Hydrometallurgy* (2017), doi: [10.1016/j.hydromet.2017.05.016](https://doi.org/10.1016/j.hydromet.2017.05.016)

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

The Anodic Behaviour of Chalcopyrite in Chloride Solutions: Voltammetry

Michael Nicol ^a, Hajime Miki ^b, Suchun Zhang ^a

^a School of Engineering and Information Technology and Energy, Murdoch University, Perth, WA 6150, Australia

^b Earth Resource Engineering, Kyushu University, Fukuoka, Japan

Abstract

This paper summarizes the results of a voltammetric study of the anodic characteristics of chalcopyrite in the potential region relevant to heap leaching in concentrated chloride solutions.

Distinct peaks in the potential region of 0.7 to 0.85 V have been observed in the voltammograms, the magnitude of which depend on the chloride concentration and, particularly, the pH in the range 1 to 3. Three peaks are observed at low chloride concentrations that merge into one peak at higher concentrations.

The anodic reactivity increases with increasing pH but shows a complex dependence on the chloride concentration while in the presence of added copper(II) ions, the mixed potential shifts to more positive potentials and only one peak is observed.

Hysteresis between the forward and backward-going sweeps has confirmed the transient nature of the processes except at potentials below about 0.75 V in which region the system approaches steady-state behaviour.

The voltammetric characteristics of chalcopyrite in this system appear to be very similar to those of covellite.

Measurements of the initial rates of dissolution (**in the range $1 - 5 \times 10^{-10} \text{ mol cm}^{-2} \text{ s}^{-1}$ depending on the conditions**) have been made that confirm the voltammetric trends and compare well with previously published rates.

Download English Version:

<https://daneshyari.com/en/article/4769278>

Download Persian Version:

<https://daneshyari.com/article/4769278>

[Daneshyari.com](https://daneshyari.com)