

Accepted Manuscript

On the refractory nature of precious metal tellurides

Laurence G. Dyer, Maziar Sauber, David G. Dixon, Edouard Asselin



PII: S0304-386X(16)30375-9
DOI: doi: [10.1016/j.hydromet.2017.03.009](https://doi.org/10.1016/j.hydromet.2017.03.009)
Reference: HYDROM 4542
To appear in: *Hydrometallurgy*
Received date: 23 June 2016
Revised date: 9 February 2017
Accepted date: 11 March 2017

Please cite this article as: Laurence G. Dyer, Maziar Sauber, David G. Dixon, Edouard Asselin , On the refractory nature of precious metal tellurides. The address for the corresponding author was captured as affiliation for all authors. Please check if appropriate. Hydrom(2017), doi: [10.1016/j.hydromet.2017.03.009](https://doi.org/10.1016/j.hydromet.2017.03.009)

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.

On the refractory nature of precious metal tellurides

Laurence G. Dyer¹, Maziar Eghbalnia², David G. Dixon², Edouard Asselin²

¹Department of Mining Engineering and Metallurgical Engineering, Western Australian School of Mines, Curtin University, Cassidy Road, Kalgoorlie, W.A. 6430.

² Department of Materials Engineering, The University of British Columbia, 6350 Stores Road Vancouver, B.C. V6T 1Z4

Petzite, Cyanidation, Telluride, Gold, Silver, Electrochemistry.

Abstract

An investigation into the factors inhibiting the leaching of precious metal tellurides in cyanide solutions and initial testing of possible methods to improve leach performance was conducted. Petzite (Ag_3AuTe_2) was the principle mineral examined, along with calaverite (AuTe_2) and hessite (Ag_2Te). Both electrochemical measurements and batch leach experiments were employed to verify findings. It was found that tellurium is not readily oxidised under standard cyanidation conditions and thus was impeding the extraction of the precious metal elements. While this appears to be the primary problem to be overcome in leaching telluride minerals (particularly calaverite and hessite), evidence of passivation (previously noted in multiple studies) by a Te-rich layer was also observed in leach tests. Both established and new approaches to improve the telluride mineral leaching were tested to examine their effectiveness and better understand the fundamental chemistry involved. While elevated pH remains the most effective approach, actually leaching tellurides faster than pure gold, small proportions of citrate improved recovery from the gold-bearing tellurides.

Keywords: Tellurides, gold, silver, electrochemistry, leaching.

Download English Version:

<https://daneshyari.com/en/article/4769361>

Download Persian Version:

<https://daneshyari.com/article/4769361>

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