

## Accepted Manuscript

Removal of sulfate from mining waters by electrocoagulation

Maria A. Mamelkina, Salvador Cotillas, Engracia Lacasa, Cristina Sáez, Ritva Tuunila, Mika Sillanpää, Antti Häkkinen, Manuel A. Rodrigo

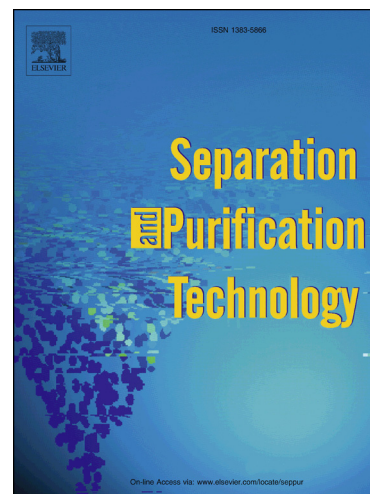
PII: S1383-5866(17)30264-2  
DOI: <http://dx.doi.org/10.1016/j.seppur.2017.03.044>  
Reference: SEPPUR 13630

To appear in: *Separation and Purification Technology*

Received Date: 23 January 2017  
Revised Date: 2 March 2017  
Accepted Date: 23 March 2017

Please cite this article as: M.A. Mamelkina, S. Cotillas, E. Lacasa, C. Sáez, R. Tuunila, M. Sillanpää, A. Häkkinen, M.A. Rodrigo, Removal of sulfate from mining waters by electrocoagulation, *Separation and Purification Technology* (2017), doi: <http://dx.doi.org/10.1016/j.seppur.2017.03.044>

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.



# Removal of sulfate from mining waters by electrocoagulation

Maria A. Mamelkina<sup>1</sup>, Salvador Cotillas<sup>2</sup>, Engracia Lacasa<sup>2</sup>, Cristina Sáez<sup>3</sup>, Ritva  
Tuunila<sup>1</sup>, Mika Sillanpää<sup>1,4</sup>, Antti Häkkinen<sup>1</sup>, Manuel A. Rodrigo<sup>3\*</sup>

<sup>1</sup>LUT School of Engineering Science, Lappeenranta University of Technology, P.O.

Box 20, FI 53851 Lappeenranta, Finland

<sup>2</sup>Chemical Engineering Department, School of Industrial Engineering

University of Castilla-La Mancha. Campus Universitario s/n, 02071 Albacete, Spain

<sup>3</sup>Chemical Engineering Department, Faculty of Chemical Sciences and Technologies,

University of Castilla-La Mancha, Edificio Enrique Costa Novella. Campus

Universitario s/n, 13005 Ciudad Real, Spain

<sup>4</sup>Department of Civil and Environmental Engineering, Florida International

University, Miami, FL-33174, USA

## Abstract

This work focuses on the removal of sulfate from mining waters by using electrocoagulation with iron electrodes. A comparison of the results obtained by electrocoagulation with those obtained with the application of conventional chemical coagulation is provided. The results show that sulfate can be removed from synthetic mining waters by electrocoagulation, and that the pH and coagulant dosage play a very important role. During chemical coagulation under acidic conditions, it is possible to use a low dosage of iron and remove more than 80% of the sulfate present in water. However, chemical coagulation seems to behave as a kind of ion-exchange process (from the viewpoint of effluent quality). Thus, significant concentrations of

Download English Version:

<https://daneshyari.com/en/article/4989846>

Download Persian Version:

<https://daneshyari.com/article/4989846>

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