

Biological and chemical control in copper bioleaching processes: When inoculation would be of any benefit?

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© 2014 Elsevier B.V. All rights reserved. Bioleaching of secondary and low-grade copper ores in heaps and dumps today is a well-established technology. However, there is still a strong need to improve the copper leaching rates and recoveries currently reached at plant level in order to improve the economics and broaden the range of application of this technology. In this context, it is important to be able to define the factors which are controlling the rate of copper leaching in different process configurations and at different stages during the operation. This work presents a conceptual mathematical model which can help to define when a bioleaching process is controlled by biological, chemical, or transport phenomena. The model is based on the kinetic analysis of the electrochemical aspects of the microbiological and chemical sub-processes involved in bioleaching. It will facilitate collaboration among biologists, metallurgists and process engineers in the search for innovative develop