

## **Simulation of Weathered Iron Ore Facies: Integrating Physical Leaching Concepts and Geostatistical Models**

RIBEIRO, D. T. <sup>1</sup> and CARVALHO, R. M. <sup>2</sup> (1) Minerações Brasileiras Reunidas – MBR, Nova Lima, Brazil; (2) Minerações Brasileiras Reunidas – MBR and State University of Campinas – UNICAMP, Brazil

Weathered iron ore consists predominantly of banded iron formation (BIF) in tropical regions. In the Quadrilátero Ferrífero – Brazil, weathering may reach 500 m in depth. An important problem in supergene iron ore modeling is the evaluation of high-grade soft ore, partly enriched itabirite and proto ore boundaries.

A simple numerical model was developed in order to simulate a leaching system in a bi-dimensional matrix, composed of two types of materials: leachable and unleachable. An equal volume proportion and vertical banding arrangement was considered. Drilling data can be used as multipoint attractors so as to remove leachable matrix nodes. Outputs from the simulated physical model serve as a source of information to be used to define the structural parameters and lithofacies proportions.

The integration of the geostatistical simulation method with a physical leaching model improves the quality of the equally probable realizations of the iron ore enrichment phenomenon, generating the final images of weathered facies distributions.