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EFFECT OF REAGENT CHEMISTRY ON FLOTATION OF MIXED COPPER ORE

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Reagent chemistry plays a vital role in numerous unit processes of mineral processing for separation of valuable minerals from gangue. For selective separation, proper choice of reagent is obligatory. Flotation is the most adoptable unit process for copper beneficiation. The process of flotation is extremely challenging due to interdependence of various operating parameters. Current study focused on the selection of reagent system based on the complex mineralogy of Malanjkhand copper-molybdenite deposit. The Malanjkhand porphyry copper deposit is of mixed type (both copper sulphide and copper oxide minerals) and lean grade ore. After continuous mining, the deposits are now left with low grade ores which contain copper sulphide as the major valuable mineral along with higher quantity of silica. In this case, flotation becomes tougher due to mixed mineralic system. From past reviews, the recovery of copper from sulphide mineral using xanthate and pine oil is relatively easy, but mixed oxide-sulphide minerals do not respond to traditional sulphide collector. There is no common reagent to recover copper from both oxide and sulphide mineral, which is a great challenge in flotation of both the minerals simultaneously. Therefore, a comparative flotation study was carried out using traditional sulphide collector (sodium iso propyl xanthate-SIPX), hydroxamate (benzo hydroxamic) collector and mixed (SIPX + benzo hydroxamic) collector system to understand how the reagent chemistry influence the selectivity in the flotation of mixed copper ore.

Biography

Silpa Sweta Jena is a Research Scholar pursuing PhD from Department of Fuel and Mineral Engineering, IIT (Indian School of Mines) Dhanbad, Jharkhand, India. She has completed B Tech in Mineral Engineering from Government College of Engineering, Keonjhar, Odisha, India. She is working on beneficiation of copper ore. She has published more than six papers in reputed international journals and international conferences.

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