Biohydrometallurgy offers various process options for metal recovery from primary and secondary resources

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Abstract:

Biohydrometallurgy offers various process options including bioleaching, biooxidation, biomineralization, bioprecipitation, biosorption and bioelectrochemistry. The purpose of biohydrometallurgical research is to explore these process options for metal recovery from primary and secondary resources. Bioleaching and biooxidation have been developed over the last decades towards industrial application for processing of sulfide ores, termed biomining. Today the biomining share of the global cobalt, copper, nickel, zinc and gold production is between 0.4 % and 1.9 % for each metal. Future biomining applications may include various complex, low-grade sulfide ores, mine tailings as well as oxide ores such as limonitic laterites. Also secondary resources such as electronic scrap have become a promising target for biohydrometallurgy. The recovery of metals from metal-rich process waters, acid mine drainage and industrial wastewaters has been studied in several projects and has begun to be an industrial reality. There is a high chance that biohydrometallurgy will play a greater role for metal recovery in future.