

Challenges and Future in Ni Laterite Ore Enrichment: A Critical Review

By: [Mweene, L \(Mweene, Levie\) \[1\]](#); [Gomez-Flores, A \(Gomez-Flores, Allan\) \[1\]](#); [Jeong, HE \(Jeong, Hee-Eun\) \[1\]](#); [Ilyas, S \(Ilyas, Sadia\) \[1\]](#); [Kim, H \(Kim, Hyunjung\) \[1\]](#)

MINERAL PROCESSING AND EXTRACTIVE METALLURGY REVIEW

DOI: 10.1080/08827508.2023.2214668

Early Access: MAY 2023

Indexed: 2023-06-03

Document Type: Review; Early Access

Abstract:

Nickel is a strategic element whose production and consumption in over a decade has increased to over 39% and 71%, respectively. Generally, due to their complex mineralogy, laterites, the current attractive source of Ni, are subjected to hydrometallurgy and pyrometallurgy techniques without enrichment in order to extract Ni. Therefore, numerous investigations in vogue on laterite enrichment performed spanning from 1964 to date were reviewed in this article, and the future directions were proposed through critical synthesis. The possibilities of obtaining both higher recoveries and increase in grade for Ni were noticed using selective comminution-classification method followed by flocculation-flotation strategy. Hence, in order to improve on the reported Ni yields from selective comminution-classification process, one of the ways could be to subject the ore to a multi-stage selective comminution-classification method followed by subjecting the obtained concentrate to flocculation-flotation technique. Therefore, the findings of this investigation would aid in upscaling the production to meet the demand.

Keywords

Author Keywords: [Lateritic nickel](#); [beneficiation strategy](#); [flocculation-flotation](#); [mineralogy](#); [mineral processing](#)

Keywords Plus: [GOETHITE ALPHA-FE00H](#); [NICKEL LATERITE](#); [PRECONCENTRATION STRATEGIES](#); [SELECTIVE FLOCCULATION](#); [MAGNETIC-PROPERTIES](#); [SILICA SUSPENSIONS](#); [SODIUM-SILICATE](#); [PART I](#); [FLOTATION](#); [ACID](#)

Author Information

Corresponding Address: Kim, Hyunjung (corresponding author)

▼ Hanyang Univ, Dept Earth Resources & Environm Engr, 222 Wangsimni Ro, Seoul 04763, South Korea

Addresses:

▼¹ Hanyang Univ, Dept Earth Resources & Environm Engr, 222 Wangsimni Ro, Seoul 04763, South Korea

E-mail Addresses: kshjkim@hanyang.ac.kr

Categories/ Classification

Research Areas: Metallurgy & Metallurgical Engineering; Mining & Mineral Processing

Web of Science Categories: [Metallurgy & Metallurgical Engineering](#); [Mining & Mineral Processing](#)

Funding