

# **Production of Non-ferrous metals through Processing of their Lean Ores and Wastes**

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## **Abstract**

Most of the ores and minerals of non-ferrous metals except bauxite and limonite available in India are lean and complex in nature. Further, the reserves of these are much less compared to those of ferrous metals. In order to meet the increasing demands of these high valued metals in the country, efforts should be made to process their available ores and the wastes. In this paper, an account of various processes developed by the author and others for the extraction of non-ferrous metals from lean and complex ores as well as the wastes of metallurgical and allied industries, has been given. Some of the processes like extraction of vanadium from vanadium bearing titaniferous magnetite and nickel, cobalt from lateritic nickel ores, recovery of copper, nickel, cobalt from copper converter slag and flue dust and recovery of niobium, tantalum, zirconium, titanium, tin from tin smelter slag should receive more attention for their commercialization. In some cases, it is suggested to carry out pilot scale studies to assess their techno-economic viability for large scale production.