

A NOVEL ROASTING METHOD FOR TREATING HIGH-CHROMIUM VANADIUM SLAG

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In this study, a novel clean roasting process for extracting vanadium from vanadium slag has been developed. The high-chromium vanadium slag was treated by NaOH-Na₂CO₃ binary sodium salts in the roasting process, and the effect of related parameters on the roasting was investigated. During the NaOH-Na₂CO₃ binary roasting process, the roasting temperature, roasting time and NaOH-Na₂CO₃ mass ratio took a significant role in the extraction rate of vanadium and chromium. The ferrihydrite (Fe₃O₄) was oxidized to ferric oxide (Fe₂O₃), V₂O₅ and Cr₂O₃ were converted to the β-natrium-vanadate type structure of Na₃VO₄ and orthorhombic-type crystal structure of Na₂CrO₄, respectively. Under the optimum roasting conditions (roasting temperature of 600, roasting time of 60 min, and NaOH to Na₂CO₃ mass ratio of 1.5:1), the extraction rates of vanadium and chromium were 98.66% and 83.57%. The major metal element in the leaching residue was Fe.

Biography

Aijun Teng was the Doctoral student from Department of Resource and Environment of Northeastern University. He worked on the Metallurgical Resources Recycling and Waste Treatment Field.

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