

Recovery Ni and Li from Ternary Cathode Materials after Manufacture Cobalt-Manganese Bromide Catalyst (CMB)

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Extended Abstract

The research was carried out about recovery nickel and lithium in the raffinate that is solution after manufacture cobalt-manganese bromide (CMB) by recovering cobalt and manganese from lithium ion battery ternary cathode material leaching solution. In general, after recovering cobalt, the nickel refining method is the solvent extraction method using Cyanex 272 or PC88A. In this research, however, nickel was recovered using Cyanex 272 from solution that was completely removed small amount of cobalt through scrubbing process. In order to recover nickel from aqueous solution containing 10,290 mg/L of nickel and 6,320 mg/L of lithium, 3 stage countercurrent extraction was carried out in condition of 0.48 M Cyanex 272, 50% saponification, O/A=2. Loaded organic contained 4,211 mg/L of nickel and 330 mg/L of lithium. In scrubbing experiment at an interval of pH to remove the co-extracted lithium in the loaded organic solution, loss of nickel was 2.3 mg/L and lithium of 319mg/L was scrubbed. Scrub rate of lithium reached 96.8%. Nickel in the loaded organic solution was stripped using nitric acid and sulphuric acid and then the pure nickel solution was obtained. Nickel sulphate (NiSO_4) is produced from nickel solution by the vacuum distillate. Lithium remaining in the raffinate is recovered as lithium carbonate (Li_2CO_3) by adding sodium carbonate (Na_2SO_4) in condition of pH 10 and 80 degrees Celsius.