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Synergistic Extraction Study of Cobalt (II) from Sulfate Medium by Mixtures of Capric Acid and Tri-N-Octylphosphine Oxide in Chloroform

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Abstract : The synergistic solvent extraction of cobalt (II) from 0.33 mol dm-3 Na2SO4 aqueous solutions with capric acid (HL) in the absence and presence of tri-n-octylphosphine oxide (TOPO) in chloroform at 25°C, has been studied. The extracted species when the capric acid compound was used alone, is CoL2(HL)2. In the presence of TOPO, a remarkable enhancement on the extraction of nickel (II) with 0.02 mol dm-3 capric acid was observed upon the addition of 0.0025 to 0.01 mol dm-3 TOPO in chloroform. From an synergistic extraction- equilibrium study, the synergistic enhancement was ascribed to the adduct formation CoL2(HL)2 n(TOPO). The TOPO-HL interaction strongly influences the synergistic extraction efficiency. The synergistic extraction stoichiometry of cobalt (II) with capric acid and TOPO is studied with the methods of slope analysis. The equilibrium constants were determined.

Keywords : solvent extraction, cobalt (II), capric acid, TOPO, synergism
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