

Nuttakun Khunpakdee 2010: Liquid-liquid Extraction of Concentrated Platinum(IV) and Rhodium(III) from Acidic Chloride Solution Using Tri-octylamine. Master of Engineering (Chemical Engineering), Major Field: Chemical Engineering, Department of Chemical Engineering. Thesis Advisor: Assistant Professor Attasak Jaree, Ph.D. 52 pages.

This research dealt with the intensification of Pt-Rh separation via liquid-liquid extraction (LLE). The stock solution contained Pt(IV) and Rh(III) at high concentration level in hydrochloric solution; 625 ppm and 104 ppm respectively. Tri-octylamine (TOA) in toluene was used as an extractant. For single stage extraction, the percentage of extraction was 97% for Pt(IV) and 21% for Rh(III). Soybean oil as a solvent in LLE provided good extraction performance comparable to that of toluene. Pt(IV) was almost completely removed from the organic phase when stripped by 8 M nitric acid. Extraction with direct recycling of organic phase after stripping significantly decreased the separation factor to 13 during the 5th stage. When the organic phase was washed with 1 M NaOH prior to be used in the next extraction stage, the separation factor increased to 818 during the 5th stage. Finally, the Pt-Rh continuous separation process scheme is presented.

Student's signature

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