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Extraction of platinum complex $[PtCl_6]^{2-}$ into TOPO in organic solution using salting-out effect of KCl

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In the present study, extraction of platinum complexes from leach liquors of spent catalysts in aqua-regia into organic phase by the extractant trioctylphosphine oxide (TOPO) in toluene has been studied. platinum contained in the spent catalysts are leached out from the catalyst matrix by concentrated Hydrochloric acid and Nitric acid as the sole oxidizing agents in the form of chlorocompex $[PtCl6]^{-2}$. We used alkaline metal salts as additives for enhancement of percentage of $[PtCl6]^{-2}$ and distribution ratio of Platinum. Besides, effects of various parameters on the distribution ratio of platinum complexes has been investigated. We found KCl as the best alkaline metal salt which could affect both platinum extraction up to 90% and distribution of platinum complex at the desirable directs. Pt extraction had a very slight increase by time after the first half minute. It means that most of the Pt was extracted in the first 30 seconds. Therefore the equilibrium time is less than 30 seconds and the Pt extraction by TOPO is kinetically fast. This fact may resolve the problem of time-consuming extraction of Platinum by other extractants.

Biography

Hesam Hassan Nejad is now a PhD student at The University of Akron and had completed his Master of Science degree from Sharif University of Technology. His Supervisor is Prof. Chase at the Chemical and Biomolecular Engineering Department. His research field is Hydrometallurgy specially Platinum Recovery by different extractants and he has published papers in peer-reviewed journals and international conferences.

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