Extraction Behavior of Technetium and Neptunium in Nuclear Fuel Reprocessing[1,2]

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Abstract - The solvent extraction behavior of neptunium and technetium in nuclear fuel reprocessing with a current PUREX process and an advanced PUREX process (PARC process) were studied in chemical flow-sheet experiments using spent nuclear fuels. The uranium, plutonium, neptunium, and technetium fractions distributed over the products and raffinates in PARC process showed that *n*-butyraldehyde was an effective reductant of Np(VI) in the presence of U(VI) and Pu(IV). It was also found that the high acid scrubbing was effective for technetium separation. *n*-Butylamine compounds were found to be effective salt-free reagents for solvent washing.