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Separation of Curium from Americium Using Composite Sorbents and Complexing Agent Solutions

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Two liquid liquid extraction processes intended as a part of the Partitioning and Transmutation strategy have been used as a basis for development of chromatographic systems for separation of curium from americium. The liquid organic phase of the EXAm process was replaced by DMDOHEMA-PAN composite sorbent and TEDGA in nitric acid solution was employed as an aqueous-phase complexing agent. The liquid organic phase of the AmSel process was replaced by TODGA-PAN composite sorbent and sulfonated BTBP derivative in nitric acid solution was employed as an aqueous-phase complexing agent. The influence of aqueous phase complexing agent and nitric acid concentrations on weight distribution coefficients and separation factor as well as the kinetics of the actinide uptake were determined in batch experiments with trace amounts of Am-241 and Cm-244 radionuclides. The efficiency of Cm separation from Am was evaluated in column experiments.

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