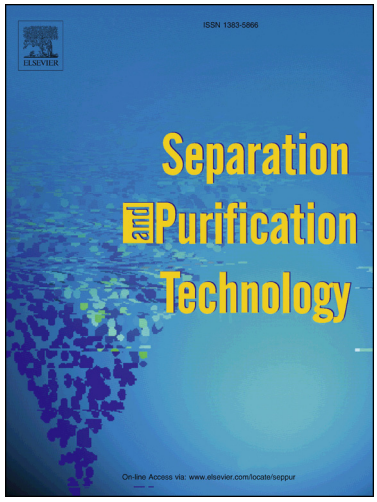

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Selective extraction of Am(III) over Eu(III) in nitric acid solution by NTAamide(C8) using a novel water-soluble bisdiglycolamide as a masking agent

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Abstract

A novel water-soluble ligand of *N*,*N*,*N'''*,*N'''*-tetraethyl-*N'*,*N''*-ethidene bisdiglycolamide (TEE-BisDGA) was synthesized and used as a masking agent for selective extraction of Am(III) over Eu(III) from HNO_3 solution by *N*,*N*,*N'*,*N'*,*N''*,*N''*-hexaoctylnitrilotriacetamide (NTAamide(C8)) in kerosene. Influences of acidity, concentration of water-soluble ligands and extractant on the distribution ratios (*D*) and separation factors (*SF*) of Am(III) and Eu(III) were investigated. In the range of examined acidity from 0.001 to 0.2 mol/L, D_{Am} and D_{Eu} decreased with the increase of HNO_3 concentration. Using 0.1 mol/L NTAamide(C8) as an extractant, the maximum $SF_{Am/Eu}$ of 26 can be obtained in the presence of 0.01 mol/L TEE-BisDGA in aqueous phase with pH of 3.0, which was significantly higher than that case with no TEE-BisDGA. Job's method and mole ratio method were employed for extraction mechanism research. It has been shown that Am(III) and