

## Micelle mediated extraction of americium and europium by calix[4]arene phosphine oxides from nitric acid media

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### Abstract

© 2016, Akadémiai Kiadó, Budapest, Hungary.  $^{152}\text{Eu}$  and  $^{241}\text{Am}$  recovery from  $\text{HNO}_3$  by conventional and micelle mediated extraction are studied. It is stated that radionuclides distribution ratios  $D$  ( $KD$ ) in micelle mediated extraction are significantly higher than those of conventional extraction, with  $^{241}\text{Am}$  is slightly less extracted than  $^{152}\text{Eu}$ . Distribution ratios dependence on medium acidity is similar for both processes, with extraction maximum at  $C$  ( $\text{HNO}_3$ ) = 0.2–1 mol  $\text{L}^{-1}$ . Microscopic research and dynamic light scattering prove micellar nature of calixarene solutions. Nano-scale of particles, which accumulate radionuclides, is confirmed by ultramicrofiltration. This method is also applied for studies of radionuclides re-extraction and electrochemical deposition.

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### Keywords

Americium, Europium, Micelle mediated extraction, Micelle shape and size, Phosphorylated calix[4]arenes, Ultramicrofiltration

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