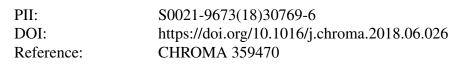
### Accepted Manuscript

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### ACCEPTED MANUSCRIPT

# Separation of Neptunium (IV) from Actinides by Solid Phase Extraction Using a Resin Containing Aliquat 336

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#### HIGHLIGHTS

- A novel solid phase extraction resin containing Chromosorb W and Aliquat 336 was prepared
- Batch uptake studies were carried out using Np, Pu and U radiotracers
- Column mode operations were done to obtain breakthrough profiles
- Np was selectively separated from a mixture of Np, U and Pu with decontamination factor (with respect to Pu) of 300

#### SUMMARY

An extraction chromatographic resin material containing Aliquat 336 as the liquid anion exchanger extractant and Chromosorb W as the solid support was prepared and tested for the uptake of  $UO_2^{2+}$ ,  $Np^{4+}$ ,  $Pu^{4+}$ , and  $Pu^{3+}$  from nitric acid feed solutions. The resin beads were characterized by thermogravimetry / differential thermogravimetry (TG/DTG) and scanning electron microscopy (SEM) surface morphology analysis. The uptake trend for the metal ions from 3 M HNO<sub>3</sub> was found to be  $Pu^{4+} >> Np^{4+} >> UO_2^{2+} \sim Pu^{3+}$  which clearly followed the trend

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