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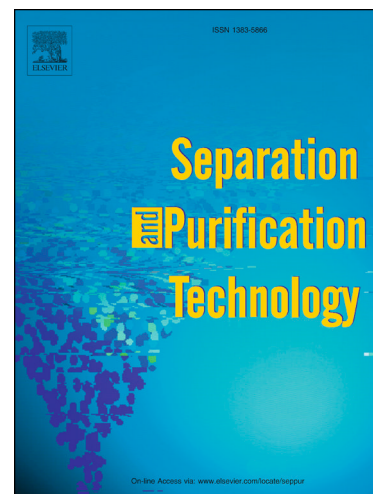
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Ether Derivatives - Efficient Fe(III) Extractants from HCl Solution

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Abstract: In this research, *N*-decoxy-1-(pyridin-3-yl)ethanimine, *N*-decoxy-1-(pyridin-3-yl)methanimine and *N'*-(2-ethylhexyloxy)pyridine-4-carboximidamide were tested as novel extraction agents for the Fe(III) recovery. The solvent extraction of Fe(III) using the synthesised compounds has been investigated as a function of phase contact time, HCl, Cl⁻ and Fe(III) concentrations, as well as the extractant structure and its concentration. The effect of different diluents (aliphatic and aromatic) with and without addition of decan-1-ol on extraction of iron(III) was also investigated. The discussion also included the mechanism of complexation. The speciation studies indicated that acidic conditions the extracted species was found to be (D-3EI)₂·FeCl₂, (D-3EI)₂·HFeCl₄, (D-3MI)₂·FeCl₂ and (Eh-4IA)₃·FeCl₂

Moreover, the laboratory-scale experiments indicated that *N*-decoxy-1-(pyridin-3-yl)ethanimine was the most efficient in the Fe(III) extraction and it was proposed for the iron(III) removal from the leachate solution containing 190 g/L HCl, 36 g/L Fe(III) and others elements such as Cr, V, Ca, Mg, Al, Mn and Si.

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