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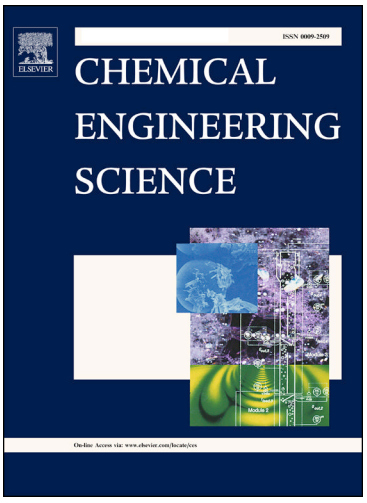

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Factors Influencing Separation Selectivity of Rare Earth Elements in Flat Sheet Supported Liquid Membranes

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Abstract

Separation selectivity of the mixture Yttrium-Neodymium-Dysprosium using Bis (2-ethylhexyl) hydrogen phosphate (D2EHPA) as extractant in a flat sheet supported liquid membrane was studied by simulations. A new definition of selectivity and a diffusional-kinetic transient model were used in the calculations. Resistance distribution between the phases, stripping phase pH, extractant concentration and initial feed concentration have great influence on selectivity and process time and their appropriate management would improve separation. The analysis of selectivity using the present model would be a useful tool to design a multistage process aimed at the separation of a multicomponent mixture of rare earth elements into its constituents.

Keywords: Supported liquid membrane extraction, Modeling, Separation, Extraction, Lanthanide, Selectivity.

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