

Modeling and Simulation of Solvent Extraction Processes for Purifying Multi-Component Rare Earth Metals with Saponified PC88A

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The solvent extraction process simulator of multi-component rare earth metals with saponified PC88A is newly developed by solving the thermodynamic equilibrium equations without numerical problems. As the number of rare earth metals to be separated increases, the thermodynamic equilibrium equations have the numerous variables. To solve the nonlinear equations of the thermodynamic equilibrium equations, a large number of initial guess values are needed and these values cannot be determined appropriately, resulting in the numerical problems. So, it is necessary to decrease the number of thermodynamic equilibrium equations by using the model simplification method. Then, the new solvent extraction process simulator is developed by applying the algorithm equipped with the simplified models and it can estimate all the equilibrium concentrations of all the stages. Furthermore, a trial version of the solvent extraction process simulator is developed by programing the proposed algorithm with the Visual Studio 2010. The trial version is available at the website of <http://www.pse.knu.ac.kr> and anyone can freely download and use it for his/her purpose.