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Separation of Minor Actinoids(III) over Lanthanoids(III) by BTBP or BTPhen Extracting Compounds

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Different extraction systems for the separation of trivalent minor actinoids over lanthanoids were studied during last years. The CyMe4-BTBP and its derivatives have been demonstrated to be prospective extractants for the solvent extraction of minor actinoids over lanthanoids from high-level liquid waste issuing the reprocessing of irradiated nuclear fuel (the r-SANEX process).

The presentation will be focused on different effects of 1,2,4-triazine extracting compounds and diluents on extraction systems properties. The results of testing the CyMe4-BTBP ligand and its new derivatives (such as Cy5-S-Me4-BBP, Cy5-O-Me4-BTBP, MeCyMe4-BTBP or t-BuCyMe4-BTBP) for the separation of Americium(III) over Europium(III) from HNO₃ solutions and influence of the used diluents (both polar and non-polar) will be discussed. Moreover, complexing properties of several novel hydrophilic ligands, such as (PhSO₃Na)₂-BTBP, (CH₂NMe₃)₂-BTBP or (PhSO₃Na)₂-BTPhen will be described as prospective agents for i-SANEX process.

In addition to the dependences of Americium(III) and Europium(III) distribution ratio values and their mutual separation factor values on HNO₃ concentrations, the results of the thermodynamic and kinetic studies will be presented.

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