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Hydrometallurgical actinide separation processes for advanced nuclear fuel cycles

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Strategies for advanced nuclear fuel cycles, recycling all transuranium elements (TRU) as nuclear fuel, are developed in many countries. These fuel cycles require separating TRU from irradiated fuels. Hydrometallurgy (a.k.a. solvent extraction) is a versatile technique for the separation of ionic solutes, thus offering possibilities for the required separation processes. This lecture gives an overview of the development of hydrometallurgical TRU separation processes in the context of advanced nuclear fuel cycles with a focus on the achievements from past and current European research programmes.