Co-processing of actinides in nuclear fuel cycles

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Abstract

In view of increased discussions on the safe use of nuclear energy, also the option to reduce the burden of nuclear waste to future generations is being investigated with great interest. This includes the transmutation part where a demonstration is under development at the SCK Mol (MYRRHA project) but also the separation part developed in Europe mainly at the CEA and in the European ACSEPT program. Apart from separation of individual actinides (U, Pu, Np, Am and Cm) an alternative is the co-processing of all actinides. The latter approach represents clearly a simpler process scheme due to a reduced number of steps and a better proliferation resistance due to impure products. A major disadvantage is the need of remote handling at the re-fabrication of targets.

At ITU investigations of the co-processing options are under way both for the aqueous- and the molten salt routes. In this paper the status of both studies is being described and discussed.