SESSION II

Partitioning Technology

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Papers presented **5**

Recent Progress in Actinide Partitioning at ITU
J-P. Glatz et al. (European Commission), T. Inoue et al. (CRIEPI, Japan)

Conversion of Oxide into Metal or Chloride for the Pyrometallurgical Partitioning Process
Y. Sakamura et al. (CRIEPI, Japan)

Study of Electrochemical Processes for Separation of the Actinides and Lanthanides in Molten Fluoride Media
R. Zvejskova et al. (NRI Rez, Czech Republic)

Processing of Spent TRISO-COATED GEN IV Reactor Fuels
B.B. Spencer et al. (ORNL, USA)

Partitioning of Cesium and Strontium from Dissolved Spent LWR Fuel using a Novel Crown Ether/Calixarene Solvent
J.D. Law et al. (INEEL, USA)

Overview

Five papers were presented during Session II on Partitioning Technology. Although no partitioning technology has been commercialized as yet, many intensive studies are being carried out in several countries. Recent progress in actinide partitioning at ITU, including an aqueous processing based on the DIAMEX-SANEX process and a pyrochemical process, was introduced.

The conversion of oxide into a metal or chloride for a pyrometallurgical partitioning was presented by CRIEPI. They effectively compared the process characteristics of such processes as a lithium-reduction, and electrochemical reduction, using lithium chloride or calcium chloride and the chlorination techniques by employing chlorine or zirconium chloride.

Electrochemical separation of actinide and lanthanide in a molten fluoride media was introduced by Czech-NRI, demonstrating the possibility of a uranium/thorium separation from fission products by an electrolytic deposition at the solid cathode via an electrorefining by employing a molten eutectic mixture of LiF-NaF-KF(FLINAK) as the electrolyte.

The experience of the crush-leach process for treating used TRISO-coated fuels was introduced by ORNL. Even although this process would be effective for removing the graphite block from fuel compacts, they pointed out the problems of the very fine particles of carbon in the filtration process and therefore it was stressed that the particle size should be carefully controlled during the milling.

The partitioning studies of cesium and strontium, aiming at reducing the heat load of spent nuclear fuels in a geological repository, by using the solvents of Crown Ether and Calixarene was presented by Nevada University. A synergistic extraction mixture for the simultaneous separation of cesium and strontium from dissolved spent nuclear fuel solutions was developed.