

International Conference on Fast Reactors and Related Fuel Cycles: Next Generation Nuclear Systems for Sustainable Development (FR17)



Contribution ID: 376

Type: POSTER

Full-fledged affination extractive-crystallizing platform for technology validation of the fast reactor spent fuel reprocessing on fast neutrons –the results of first experiments

Tuesday, June 27, 2017 5:30 PM (1h 30m)

Further effective development of fast energy engineering could not be realized without strategy of nuclear fuel cycle closure. Throughout the realization of this strategy combined PH-technology of mixed nitride uranium-plutonium fast reactor spent fuel is proposed.

Full-fledged affination extractive-crystallizing platform was created for hydrometallurgical processes adjustment and above mentioned technology functional test. The platform guarantees the compliance with the radiation and nuclear safety requirements for working processes with hot spent fuel simulator, which main component is U-Pu-Np mixture, including Am, Tc, stable elements and radioactive tracers.

Scientific and engineering solutions provide the conduction of spent fuel reprocessing technology adjustment research on low capacity, which appears to be the boundary between laboratory test equipment and industrial grade equipment, also provide the performance of equipment rerouting for different alternate layouts verification, the performance of computer-assisted control and operating procedure monitoring.

The platform provides the research results verification along with mathematical model prediction results, the testing of different reagents, the performance procedure adjustment of analytical measurements; the platform can be also used as training complex.

Platform equipment functional test operations on uranium simulator with stable fission products were accomplished, the results of first experiments were obtained.

Keywords: affination platform, spent fuel reprocessing, spent fuel simulator

Country/Int. Organization

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Session Classification: Poster Session 1

Track Classification: Track 4. Fuel Cycle: Sustainability, Environmental Considerations and Waste Management Issues