

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



Contribution ID: 10

Type: ORAL

INTEGRAL EXPERIMENTS WITH MINOR ACTINIDES AT THE BFS CRITICAL FACILITIES: STATE-OF-THE-ART SURVEY, REEVALUATION AND APPLICATION

Tuesday, June 27, 2017 10:40 AM (20 minutes)

The paper presents the results of a computational and experimental analysis of a systematized and revised series of experiments carried out between 1990–2013 on measurements of absolute fission rate of minor actinides (from ^{237}Np to ^{245}Cm) in different neutron spectra at the BFS-1,2 facilities. A total of 25 critical configurations, i.e., reactor core models with different fuels and coolants were examined. The earlier experimental data have been revised according to more accurate data processing methods with account of permanent chamber deformations and introduced corrections to the efficiency of detecting fragments (fission events in the chambers). The computational models of assemblies presented in the international handbooks were supplemented with evaluated fission rate ratio models using non-analog algorithms. The resulting consistent set of experimental data and computational models can be used in solving various applied and fundamental problems. A generalization and re-evaluation of a series of integral experiments at the BFS facilities can serve as an information base for the verification and refinement of evaluated minor actinides neutron data. The analysis of all the available set of data on minor actinides fission rate ratio measurements can be used for supporting rationale and planning of research programs for critical assemblies.

Country/Int. Organization

Russian Federation

Primary author: Ms ANDRIANOVA, Olga (IPPE JSC “SSC RF –IPPE”, 1, Bondarenko sq., Obninsk, Kaluga reg. 249033)

Co-authors: Mr MIHAILOV, Gennady (IPPE); Dr DULIN, Viktor (IPPE); Mr DULIN, Vitaliy (IPPE)

Presenter: Ms ANDRIANOVA, Olga (IPPE JSC “SSC RF –IPPE”, 1, Bondarenko sq., Obninsk, Kaluga reg. 249033)

Session Classification: 6.3 Neutronics - 1

Track Classification: Track 6. Test Reactors, Experiments and Modeling and Simulations