

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



Contribution ID: 63

Type: ORAL

## PROBLEMS OF CALCULATION MODELLING OF NITRIDE FUEL PERFORMANCE: DRAKON CODE

*Tuesday, June 27, 2017 1:30 PM (20 minutes)*

The main life limiting factor of nitride fuel pins at high burn-up is fuel cladding mechanical interaction (FCMI) leading to strong deformation or even cladding destruction. The consequences of FCMI depend on fuel and cladding swelling rates, cladding creep rate, cladding long-term stress rupture etc. The calculation modelling problem arise from not enough data on nitride out-of-pile properties and in-pile behavior in dependence on plutonium content, fuel density, irradiation temperature, as well as lack of reliable data on irradiation steel cladding properties. Within the framework of the PRORYV project a comprehensive program for calculation and experimental studies of mixed nitride fuel for BN-1200 and BREST-OD-300 reactors has been designed to provide the required data.

The DRAKON code is designed for numerical simulation of temperature and stress-strain state of fast reactors ni

Currently DRAKON code is used to study performance of the experimental nitride fuel pins of BN-600 reactor and t

### Country/Int. Organization

Russian Federation

**Primary author:** Mr MARINENKO, Evgenii (Institute for Physics and Power Engineering)

**Co-authors:** Dr ZABUDKO, Liudmila (Innovative & Technology Center by "PRORYV" Project); Ms GANINA, Svetlana (JSC "SSC RF -IPPE"); Mr FOLOMEEV, Vladimir (JSC "SSC RF -IPPE")

**Presenter:** Mr MARINENKO, Evgenii (Institute for Physics and Power Engineering)

**Session Classification:** 5.10 Fuel Modeling and Simulation

**Track Classification:** Track 5. Fast Reactor Materials (Fuels and Structures) and Technology