



Contribution ID: 53

Type: **not specified**

## Modelling of the H2020 INSPYRE fuel creep experiment in HFR with TRANSURANUS

*Wednesday 6 November 2019 15:10 (20 minutes)*

The fuel creep experiment is currently being prepared within the H2020 INSPYRE project for irradiation in High Flux Reactor in Petten. The goal of this experiment is to produce in-core online measurements of dimensional changes of UO<sub>2</sub> and MOX fuel samples under applied axial load.

In this work TRANSURANUS (TU) Fuel Performance Code in combination with Finite Element Analysis (FEA) is used to model the fuel creep irradiation experiment in great detail. The thermal analysis of the experiment is carried out using the FEA. Such approach enables to model a rather complex geometry of the experiment, and to include axial heat transport (not implemented in TU).

The TU is modified in order to use the externally calculated with the FEA temperatures, and to include the axial load present in the experiment. The TU provides the FEA with fuel pellet dimensions and temperature and burnup dependent fuel properties.

The developed model is used to predict the fuel behavior using a selection of foreseen irradiation scenario's. The results will be used for optimization of the irradiation parameters and for data analysis.

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**Session Classification:** Session 7