

COMSOL Multiphysics® Software: Simplifying Workflow and Promoting Innovations in Nuclear Engineering at ORNL

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Abstract

At Oak Ridge National Laboratory (ORNL), COMSOL Multiphysics® software has become a preferred software for certain multiphysics applications in nuclear engineering. This presentation will highlight some of the ongoing activities in the following areas: (1) Highly enriched uranium (HEU) to low enriched uranium (LEU) conversion of the High Flux Isotope Reactor (HFIR), (2) New and improved safety analysis capabilities for the present HFIR HEU core, (3) Plutonium-238 isotope production in HFIR for the National Aeronautics and Space Administration (NASA)'s deep space missions, (4) HFIR beam line safety analysis, (5) Design, safety analysis and technical reviews for material irradiation tests in HFIR, and (6) Centrifugal pump design and performance characterization for molten salt reactors and test loops.