Abstract Submitted
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Ion Beam Irradiation Experiment to Simulate Fast Neutron Damage in Nickel Exposed to Molten Salt[1] ELIZABETH SOOBY, Texas A&M University, Accelerator Research Laboratory, MAGDA CARO, ROBERT HOULTON, Ion Beam Materials Laboratory, Los Alamos National Laboratory, FENG LU, PETER MCINTYRE, AKHDIYOR SATTAROV, Texas A&M University, Accelerator Research Laboratory, JOSEPH TESMER, YONGQIANG WANG, Ion Beam Materials Laboratory, Los Alamos National Laboratory — A novel technology for Accelerator-based Destruction of Actinides in Molten salt (ADAM) is being developed as a method to destroy the transuranics in used nuclear fuel. The core structural components are exposed to radiation damage by fast-spectrum neutrons and corrosion in ∼600 C chloride molten fuel salt. Candidate materials for the core vessel and structural components are Ni and Ni-based alloys. An to expose candidate materials to simultaneous molten salt corrosion and ion-beam damage are staged at the Ion Beam Materials Laboratory at Los Alamos National Laboratory. A thin Ni window is engineered to allow the 5.5 MeV proton beam to pass through the window and deposit approximately 20 DPA at the molten salt interfacing surface. $CeCl_3$-NaCl is employed as a surrogate for the actinide chloride salt. Irradiation occurs over one week, allowing 100 hours of molten salt exposure. The experimental design and preliminary modeling will be presented here.

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