



Integrated Nuclear Fuel and Structural Materials Research Center at the University of Florida Training Reactor

Applicant Name: University of Florida

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ABSTRACT:

The University of Florida Training Reactor (UFTR) has resumed operations after a multiyear outage for facility renovation. The primary usage of the reactor is for education, research, and training in the areas of operations, I&C, and reactor safety. The UFTR has available facility square footage, a hot cell with connections to a fast rabbit system into the reactor core, and the ability to safely handle irradiated material. The expertise exists, and there is accessible potential to add a powerful irradiated materials testing and analysis capability to the UFTR.

We will leverage the synergies between the UFTR and the materials research program to create an Integrated Nuclear Fuel and Structural Materials (INFS) research center, which will expand the installed infrastructure of the UFTR and improve the reactor facility capabilities and utilization. This center will pave the way to the UFTR joining the ATR National Scientific User Facility Program. The proposed project has four key components:

1. Refinish the existing reactor hot cell by replacing the existing manipulators with more capable modern units. The present hot cell manipulators are nonfunctional and the cell has sat unused for many years.
2. Install the infrastructure necessary for thermal-mechanical tests on irradiated materials; including shielded inert atmosphere glove boxes and radioactive fume hood for sample preparation and test assembly.
3. Centralize the existing radioactive material research equipment, including mechanical grinder/polisher, electropolisher, cold isostatic pressing, SEM (scanning electron microscopy), etc. at the reactor where more extensive hot work can be performed and samples can be shipped and handled under license.
4. Add more scientific characterization equipment for the state of art nuclear materials research that can be most optimally performed at a research reactor facility.

The goal for the Florida INFS research center will be to enable the UFTR to be an Advanced Test Reactor National Scientific User Facility (ATR NSUF) University Partner Facility, dedicated for use by any institution across the U.S. needing this advanced irradiated material analysis capability.