Scientific Infrastructure Support for Post Irradiation Examination of Materials at MURR

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Collaborators: John Brockman, University of Missouri

Program: General Scientific Infrastructure

ABSTRACT:

This proposal requests $225,933 in funding from the U.S. Department of Energy's University Research Reactor General Scientific Infrastructure (GSI) Support Program. The equipment requested will establish a core of materials characterization capabilities at the University of Missouri Research Reactor Center (MURR. This includes a Raman spectroscopy system, a microhardness tester, a micro test stand, a microscope and a digital image correlation system. The requested materials science equipment will greatly enhance the ability of students and researchers to perform work characterizing radioactive / irradiated materials, which has high relevance to the DOE-NE R&D program. As an example, the Raman system will allow researchers at the University of Missouri and our partner organizations to explore novel fuel cladding materials in conjunction with the DOEs accident tolerant fuel program for light water reactors. Our vision for creating expanded materials science capabilities is to give researchers and students the ability to deliver relevant dose to samples in MURR's pool that can then be readily evaluated in a safe, secure, well-maintained environment.

Under direction of Drs. Gahl and Brockman, PIE equipment acquisition and installation will follow two major phases. Phase 1: Procurement. Upon award, this phase of the project will involve the PI and MURR support personnel working with the University's Office of Procurement and Acquisition in refining final specifications for the PIE equipment. Following federal, and state procurement guidelines, bids will be issued for acquiring the needed equipment. Phase 2: Installation. Phase 2 will involve performing as much pre-installation work as possible; thus, when removal of existing equipment from Hot Cell 07 and its renovation has occurred, the installation of PIE instruments can be performed during normal staff working hours. Throughout the installation and commissioning/testing phase, the PI will work with MURR's Director, Dr. J. David Robertson, to ensure communications with faculty/student investigators and other stakeholders to minimize disruption to research and educational activities, and to ensure that all work is conducted safely.