Mechanical Testing and Characterization Upgrades to Support Nuclear Energy Additive Manufacturing Research

Applicant Name: Colorado School of Mines

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ABSTRACT:

This project will install a subminiature mechanical testing load frame in the Mines' Nuclear Materials Laboratory managed by the Nuclear Science and Engineering Center (NuSEC), with a particular focus on establishing materials characterization capabilities for radioactive, low dose-rate, additively manufactured specimens that parallel and enhance the non-radioactive capabilities of Mines' Alliance for the Development of Additive Processing Technologies (ADAPT). The project will also purchase a sealed in-situe load cell for the Zeiss X-Radia Versa Computed Tomography System. The load cell will allow X-Ray tomography studies of low dose-rate radioactive specimens in both the neutral and as-loaded conditions.

CSM is a public institution of the State of Colorado with statutory missions in "resources, materials, energy, and the environment". The CSM Board of Trustees approved the creation of a new Nuclear Science and Engineering Program at CSM in May of 2007, establishing the only Nuclear Engineering degree program in the State of Colorado. The GSTR is a 1 MW TRIGA reactor owned and operated by the US Geological Survey at the Denver Federal Center in Lakewood, CO (<8 miles from campus) and is available to CSM for research and education activities under a long-term Facility Use and Technical Assistance Agreement. As the only operating nuclear reactor in the state of Colorado, the GSTR is a key part of CSM's new Nuclear Science and Engineering education and research program.