



Colorado School of Mines Online Nuclear Reactor Laboratory

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ABSTRACT:

The proposed project will provide a pneumatic sample transfer capability between the U.S. Geologic Survey TRIGA Reactor (GSTR) and the CSM Nuclear Science laboratories located in leased spaced at the Denver Federal Center (DFC), as well as pneumatic transfer capabilities within the CSM laboratories at the DFC. The pneumatic transfer system linking the GSTR and the CSM laboratories will allow rapid, hands-free transfers of irradiated samples from the reactor to CSM, which will reduce radiation exposure and provide for the rapid turnaround times need to conduct experiments with very short-lived radionuclides, improving CSM's ability to conduct a variety of time-sensitive nuclear research activities. The intra-laboratory transfer system will connect multiple laboratory stations, which will also be remotely accessible using readily available software and an internet connection. The resulting system will create the CSM Online Nuclear Reactor Laboratory, which will allow CSM researchers and instructors to conduct neutron irradiation, half-life measurement, neutron activation analysis, gamma spectrometry and neutron radiography remotely, enhancing CSM's research and teaching capabilities. The new virtual laboratory will also permit CSM to expand its nuclear science and engineering education outreach activities to include other universities, colleges, and high schools.

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.