DOE-ID NEPA CX DETERMINATION

CX Posting No.: DOE-ID-11-003

SECTION A. Project Title: Multipurpose Target Chamber for High-Temperature Ion Irradiation – University of Tennessee

SECTION B. Project Description

This project will build and install a multipurpose target chamber to conduct high-temperature testing of materials under ion-beam irradiation or ion implantation. Such irradiations do not generate any radiation. The target chamber will be operated under high vacuum. Once constructed, it will be connected to one of three beam lines at the ion accelerator lab in the University of Tennessee Ion Beam Materials Laboratory (UT-IBML). The target chamber will have the capability to provide sample heating at temperatures from 25 to 1200^{o}C under vacuum while being irradiated with ions.

SECTION C. Environmental Aspects / Potential Sources of Impact

The action consists of funding the purchase of equipment and instruments for an existing program. The action would not create additional environmental impacts above those already occurring at the university.

SECTION D. Determine the Level of Environmental Review (or Documentation) and Reference(s): Identify the applicable categorical exclusion from 10 CFR 1021, Appendix B, give the appropriate justification, and the approval date.

Note: For Categorical Exclusions (CXs) the proposed action must not: 1) threaten a violation of applicable statutory, regulatory, or permit requirements for environmental, safety, and health, including requirements of DOE orders; 2) require siting and construction or major expansion of waste storage, disposal, recovery, or treatment facilities; 3) disturb hazardous substances, pollutants, contaminants, or CERCLA-excluded petroleum and natural gas products that pre-exist in the environment such that there would be uncontrolled or unpermitted releases; 4) adversely affect environmentally sensitive resources. In addition, no extraordinary circumstances related to the proposal exist which would affect the significance of the action, and the action is not "connected" nor "related" (40 CFR 1508.25(a)(1) and (2), respectively) to other actions with potentially or cumulatively significant impacts.

References: B3.10 Siting, construction, modification, operation, and decommissioning of particle accelerators, including electron beam accelerators, with primary beam energy less than approximately 100 million electron volts (MeV) and average beam power less than approximately 250 kilowatts (kW), and associated beamlines, storage rings, colliders, and detectors, for research and medical purposes (such as proton therapy), and isotope production, within or contiguous to a previously disturbed or developed area (where active utilities and currently used roads are readily accessible), or internal modification of any accelerator facility regardless of energy, that does not increase primary beam energy or current. In cases where the beam energy exceeds 100MeV, the average beam power must be less than 250 kW, so as not to exceed an average current of 2.5 milliamperes (mA).

Justification: The activity consists of constructing a target chamber to be used for high-temperature ion irradiation with an ion accelerator.

Is the project funded by the American Recovery and Reinvestment Act of 2009 (Recovery Act) ☐ Yes ☒ No

Approved by Jack Depperschmidt, DOE-ID NEPA Compliance Officer on 11/28/2011