

DOE-ID NEPA CX DETERMINATION

SECTION A. Project Title: High-Speed Terahertz Scanning System for Additively Manufactured Ceramic Materials and Composites for TCR Core Materials – Alfred University

SECTION B. Project Description

Alfred University (AU) proposes to procure and install a custom-made high-speed terahertz (THz) dual scanner system that will demonstrate non-destructive imaging of advanced manufacturing (AM) ceramic materials and composites for Transformational Challenge Reactor (TCR) program core application. The system consists of a dual scanner with ~ 100 GHz and ~280 GHz sources that helps rapid screening and identification of inhomogeneities and defects in 3D-printed and consolidated materials and composites at various stages of the AM. The proposed THz scanner system will enhance the ceramic, glass, and material manufacturing education and research capability at AU and will allow the evaluation and testing of AM applied to ceramic materials and composites of various sizes and shapes that are of interest and relevant to nuclear industries. The proposed equipment will be utilized to support users from DOE federally funded research and development centers, NEUP, and nuclear industries. AU expressed its willingness to become a partner facility through the DOE's Nuclear Science User Facilities (NSUF) partnership program, thus opening the THz scanner and AM equipment up for collaborations and DOE use in the future. In addition, this equipment will also be used for education and associated research.

SECTION C. Environmental Aspects / Potential Sources of Impact

The university has procedures in place to handle any waste that will be generated through this project. 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: B1.31 Installation or relocation and operation of machinery and equipment (including, but not limited to, laboratory equipment, electronic hardware, manufacturing machinery, maintenance equipment, and health and safety equipment), provided that uses of the installed or relocated items are consistent with the general missions of the receiving structure. Covered actions include modifications to an existing building, within or contiguous to a previously disturbed or developed area, that are necessary for equipment installation and relocation. Such modifications would not appreciably increase the footprint or height of the existing building or have the potential to cause significant changes to the type and magnitude of environmental impacts.

Justification: The activity consists of procuring and installing equipment to support enhanced imaging and characterization of AM materials used in nuclear industries.

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

Approved by Jason Anderson, DOE-ID NEPA Compliance Officer, on 07/23/2021.