

# DOE-ID NEPA CX DETERMINATION

**SECTION A. Project Title: Ultrafast elemental depth profiling to enable high-throughput characterization of nuclear materials and fuels – Missouri University of Science and Technology**

**SECTION B. Project Description**

Missouri University of Science and Technology (MUST) proposes to acquire a pulsed radio frequency glow discharge optical emission spectrometer (GD-OES), with the capability of ultrafast elemental depth profiling, to demonstrate its applications in high-throughput characterization with sensitivity/accuracy of nuclear materials. A GD-Profiler 2 will be purchased from HORIBA Instruments Inc. and installed in MUST's Materials Research Center (MRC). After the installation of GD-Profiler 2, it will be used to characterize corroded nanostructured steels, corroded high-entropy alloys, and oxidized graphite and silicon carbide. This project will contribute to training graduate and undergraduate students for the next-generation workforce of national labs and nuclear industry.

**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 the acquisition and deployment of equipment to study the corrosion/oxidation behavior of nanostructured steels, high-entropy alloys and nuclear fuel materials (including graphite and silicon carbide), in relation to irradiation effects.

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.