

DOE-ID NEPA CX DETERMINATION

SECTION A. Project Title: Procurement of Micro-Autoclave for X-ray Diffraction Measurements – Illinois Institute of Technology

SECTION B. Project Description

The Illinois Institute of Technology proposes to develop a state of the art micro-autoclave at the Materials Research Collaborative Access Team (MRCAT) beamline at the Advanced Photon Source (Argonne National Laboratory) in collaboration with the Department of Physics at the Illinois Institute of Technology and the Department of Engineering Physics at the University of Wisconsin-Madison. It is proposed to develop and procure a state of the art micro-autoclave equipped with multiple sapphire windows as well as in-situ electrochemistry and connected to a recirculatory flow loop. The autoclave will be in hastelloy and will be fixed on XYZ device for aligning the autoclave remotely in front of the beamline. The proposed equipment will allow in-situ micro-scale characterization of oxide microstructure of nuclear materials under corrosion in various environments as well as the in-situ investigation of primary water radiolysis effect on corrosion.

SECTION C. Environmental Aspects / Potential Sources of Impact

The action consists of purchasing equipment to be used in research and teaching. The equipment procured through this proposal will be housed at the Illinois Institute of Technology's MRCAT beamline at the Advanced Photon Source (Argonne National Laboratory). As such, IIT operates in accordance with all Argonne National Laboratory Rules and Licenses for handling and disposal of all materials. This includes any radioactive materials that may be handled. All samples studied will be returned to the researcher's host institution for disposal as our current operating conditions set forth by the Advanced Photon Source currently require. A tiny amount of waste may be created within the instrument during sample processing. This waste will be disposed of according to the Argonne rules that we are required to follow due to our operating agreements with Argonne.

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 purchasing and installing equipment for teaching and research purposes.

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

Approved by Jason Sturm, DOE-ID NEPA Compliance Officer on 4/6/2017