

# DOE-ID NEPA CX DETERMINATION

**SECTION A. Project Title: Serial Sectioning Equipment for 3-D Characterization of Microstructure and Composition Effects on Mechanical Behavior of Enhanced Uranium Oxide Fuels – Arizona State University**

**SECTION B. Project Description**

Arizona State University proposes to purchase and operate an ion polishing system to expand existing capabilities for 3-D microstructure characterization via serial sectioning with mechanical polishing to use ion beam polishing over large areas of oxide fuel surrogates containing depleted uranium oxide.

**SECTION C. Environmental Aspects / Potential Sources of Impact**

Radioactive Material Use – Depleted uranium oxide doped with small amounts of transition metal oxides will be used in this project to characterize their microstructures and composition in 3-D using ion polishing techniques. Individual samples to be used will have a mass of around 1 or less gram and very small amounts (in the order of micrograms) will be removed during individual ion-polishing sessions.

Radioactive Waste Generation – The small amounts removed during ion polishing, in the order of micrograms, as well as material used for handling and decontamination (gloves, paper wipes, disposable tweezers, etc.) will be considered radioactive waste and will be discarded following local, state and federal laws and regulations and will have an extremely low level of activity. The ASU office of Radiation Safety will dispose of this waste following both federal and state regulations and has the appropriate permits and procedures in place to do so.

**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: B3.6 Siting, construction, modification, operation, and decommissioning of facilities for small-scale research and development projects; conventional laboratory operations (such as preparation of chemical standards and sample analysis); and small-scale pilot projects (generally less than 2 years) frequently conducted to verify a concept before demonstration actions, provided that construction or modification would be within or contiguous to a previously disturbed or developed area (where active utilities and currently used roads are readily accessible). Not included in this category are demonstration actions, meaning actions that are undertaken at a scale to show whether a technology would be viable on a larger scale and suitable for commercial development.

Justification: The activity consists of performing ion polishing for research purposes.

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 07/24/2014