DOE-ID NEPA CX DETERMINATION

CX Posting No.: DOE-ID-13-055

SECTION A. Project Title: Mixed Metal Phosphonate: Phosphate Resins for Separation of Lanthanides from Actinides – Texas A&M University

SECTION B. Project Description

The major goals of the Texas A&M University proposal are develop workable procedures for efficient separation of lanthanides from actinides and curium from americium as required for the nuclear fuel cycle using hybrid unconventional Metal-Organic Frameworks (UMOF) ion exchangers that favor high charge ions over ions of lower charge. Objectives include:

1. Determine the factors that optimize the selectivity of hybrid ion exchangers for ions of 3+ and 4+ charge.
2. Carry out a systematic study of the effect of pH on the uptake of lanthanides and actinides
3. Determine the conditions under which the actinides, NP, Pu and Am are oxidized to the AnO_2^+ state required for the separations
4. Probe the structure of amorphous UMOFs by a variety of instrumental techniques
5. Design new materials useful for nuclear separation processes.

SECTION C. Environmental Aspects / Potential Sources of Impact

Radioactive Material Use/ Radioactive Waste Generation – All work that will involve radioactive actinides will be carried out either at the Savannah River National Laboratory or the Los Alamos National Laboratory, Carlsbad Operations. All procedures for safe handling radioactive materials and disposal will follow the rules established at these two institutions. Non-actinide radioactive materials such as 137Cs and 90Sr will be utilized at the radiochemistry laboratory at Texas A&M University. Safety procedures and waste disposal are supervised by the University Office, Environmental Health and Safety.

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 developing procedures for separation of lanthanides from actinides and curium from americium 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 11/18/2013