

# DOE-ID NEPA CX DETERMINATION

**SECTION A. Project Title: Connecting Advanced High-Temperature X-Ray and Raman Spectroscopy Structure/Dynamics Insights to High-Throughput Property Measurements – Boston University**

**SECTION B. Project Description**

Boston University proposes to characterize the thermally activated properties (including viscosity, surface tension, vapor pressure, and electrical conductivity) as a function of temperature for two salt systems while recording simultaneous speciation information from structure and dynamics data. The investigation will include designing and building high-temperature chambers for the x-ray scattering experiments and glove-box compatible miniaturized devices for measuring the properties. The two salts to be studied are FLiNaK and NaF-ZrF<sub>4</sub>-UF<sub>4</sub>.

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

Radioactive Material Use/Radioactive Waste Generation – Involve very small amounts of salts containing Uranium (<10 g). Experiments involving these materials will be performed at Argonne National Laboratory where safe handling protocols for such materials are well established and routinely followed.

Chemical Use/Storage / Chemical Waste – Use and disposition of mostly fluoride salts containing one or more of the following: lithium, sodium, potassium, and/or zirconium. The total weight of materials that will be disposed through the entire project is less than 500 g.

**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 an investigation into the structure and speciation of molten salt.

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 7/29/2020