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U.S. Department of Energy
Categorical Exclusion Determination Form

Project Title: Titanates for Optimized Performance in Separations Science, Innovative Medical Applications and Photochemistry

Program or Field Office: Savannah River Site

Location(s) (City/County/State): Aiken/Aiken/South Carolina

Proposed Action or Project Description:
In this project we will synthesize nanosize titanate-based materials that can be optimized for chemical/radiochemical separations, innovative medical applications and photochemical-based applications. This project will significantly extend recent work by research team members at SRNL as well as those at Sandia National Laboratories (SNL), the University of Washington (UW), and the Oak Ridge National Laboratory (ORNL). Collectively, our previous work has shown that titanate materials are remarkably effective ion exchange materials for (1) the separation of strontium and actinides from strongly alkaline waste solutions, (2) the separation of a wide variety of metal ions from neutral and weakly acidic solutions, and (3) the delivery of biologically relevant metals to living cells under physiological conditions. We predict that the nanosize sodium- and metal-exchanged titanate materials will exhibit improved performance in radiochemical and hazardous metal separations as well as previously unexplored photoelectronic properties that could be exploited for new applications in photocatalysis and photovoltaics.

Categorical Exclusion(s) Applied:

B3.6 - Small-scale research and development, laboratory operations, and pilot projects

For the complete DOE National Environmental Policy Act regulations regarding categorical exclusions, including the full text of each categorical exclusion, see Subpart D of 10 CFR Part 1021.

☒ There are no extraordinary circumstances related to the proposal that may affect the significance of the environmental effects of the proposal.

☒ This proposal has not been segmented to meet the definition of a categorical exclusion. This proposal is not connected to other actions with potentially significant impacts (40 CFR 1508.25(a)(1)), is not related to other actions with individually insignificant but cumulatively significant impacts (40 CFR 1508.27(b)(7)), and is not precluded by 40 CFR 1506.1 or § 1021.211 concerning limitations on actions during preparation of an environmental impact statement.

☒ All of the conditions that are integral elements of the classes of actions in Appendix B to Subpart D of 10 CFR Part 1021 would be met. This proposal would not threaten a violation of applicable statutory, regulatory, or permit requirements for environment, safety, and health, or similar requirements of DOE or Executive Orders; require siting and construction or major expansion of waste storage, disposal, recovery, or treatment facilities (including incinerators), but the proposal may include categorically excluded waste storage, disposal, recovery, or treatment actions or facilities; disturb hazardous substances, pollutants, contaminants, or CERCLA-excluded petroleum and natural gas products that preexist in the environment such that there would be uncontrolled or unpermitted releases; have the potential to cause significant impacts on environmentally sensitive resources, including, but not limited to, those listed in paragraph B(4) of Appendix B to Subpart D of 10 CFR Part 1021; involve genetically engineered organisms, synthetic biology, governmentally designated noxious weeds, or invasive species, unless the proposed activity would be contained or confined in a manner designed and operated to prevent unauthorized release into the environment and conducted in accordance with applicable requirements.

Based on my review of information conveyed to me and in my possession (or attached) concerning the proposed action, as NEPA Compliance Officer (as authorized under DOE Order 451.1B), I have determined that the proposed action fits within the specified class(es) of action, the other regulatory requirements set forth above are met, and the proposed action is hereby categorically excluded from further NEPA review.

NEPA Compliance Officer: Stephen A. Danker Digitally signed by Stephen A. Danker DN: cn=Stephen A. Danker, o=DOE-SR, ou=EQMD, email=stephen.danker@srs.gov, c=US Date: 2015.04.22 14:19:11 -04'00' Date Determined: 04/20/2015

Comments: TC-A-2013-0024, Rev. 1