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U.S. Department of Energy
Categorical Exclusion Determination Form

Project Title: Microfluidics for Avanced Separation and Ultrasensitive Detection

Program or Field Office: Savannah River Site

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

Proposed Action or Project Description:
This work will be the initiation of a micro-to-nano fluidics program at SRNL which would bring the benefits of the application of Lab-on-a-Chip (LOC) devices by unveiling micro-to-nano fluidics physico-chemical phenomena. We are setting up a microfluidic system in 735-11A. The system consists of two pressure pumps driven by pressure (a type 1A nitrogen cylinder). The pressure allows fluid to be passed through micro to nanometer channels on microfluidic chips. The fluid flows typically are in the micro to nano liters per minute range upon exiting the system. We will initially test the system with organic and aqueous solutions followed by a PUREX type separation. Droplet chips will then be used to study such things as precipitation and liquid-liquid or gas-liquid separations. The precipitation study will be done primarily with metal oxalates such as rare earth oxalates.

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: Andrew R. Grainger Digitally signed by Andrew R. Grainger DN: cn=Andrew R. Grainger, o=DOE-SR, ou=EQMD, email=drew.grainger@srs.gov, c=US Date: 2013.03.18 15:29:37 -04'00' Date Determined: 03/15/2013

Comments: TC-A-2013-0035, Rev. 0