

PMC-ND

(1.08.09.13)

**U.S. DEPARTMENT OF ENERGY
OFFICE OF ENERGY EFFICIENCY AND RENEWABLE ENERGY
NEPA DETERMINATION**

**RECIPIENT:** University of California: Santa Barbara**STATE:** CA

PROJECT TITLE: Accelerating Manufacturing of Powder-Processed Strong, Lightweight, and Thermally Stable Bulk Nanocrystalline Al Alloys via Engineered Interface States

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
DE-FOA-0001980	DE-EE0009114	GFO-0009114-001	

Based on my review of the information concerning the proposed action, as NEPA Compliance Officer (authorized under DOE Policy 451.1), I have made the following determination:

CX, EA, EIS APPENDIX AND NUMBER:

Description:

A9 Information gathering, analysis, and dissemination Information gathering (including, but not limited to, literature surveys, inventories, site visits, and audits), data analysis (including, but not limited to, computer modeling), document preparation (including, but not limited to, conceptual design, feasibility studies, and analytical energy supply and demand studies), and information dissemination (including, but not limited to, document publication and distribution, and classroom training and informational programs), but not including site characterization or environmental monitoring. (See also B3.1 of appendix B to this subpart.)

B3.6 Small-scale research and development, laboratory operations, and pilot projects Siting, construction, modification, operation, and decommissioning of facilities for smallscale 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 deployment.

Rationale for determination:

The U.S. Department of Energy (DOE) is proposing to provide funding to University of California, Santa Barbara (UCSB) to develop a novel approach for the synthesis of thermally stable nanocrystalline aluminum (Al) based alloys. Specifically, a powder-based synthesis process would be utilized to fabricate alloys that meet targeted material parameters (e.g. strength, thermal stability). The project would be completed over two Budget Periods (BPs). This NEPA Determination will be applicable to all project activities for both BPs.

Proposed project activities would be performed via two parallel and complementary synthesis/processing tracks. For its part, UCSB would perform activities focused on developing processes for combinatorial thin film synthesis. Specific work activities to be performed by UCSB would include thin film synthesis, material characterization (i.e. high-throughput performance screening), and mechanical testing of materials (e.g. tensile testing, durability testing). Project partner University of California, Irvine (UCI) would focus its efforts on the development of processes for full powder processing and sintering of nanocrystalline alloy materials. Work activities to be performed by UCI would include alloy selection/composition development, mechanical alloying (i.e. ball milling), deposition (e.g. sputtering), and alloying process optimization (e.g. varying process parameters such as milling time and milling media).

All project activities would be coordinated by UCSB and performed at existing, purpose-based laboratory facilities that regularly perform work similar in nature to that included in the scope of this project. UCSB would perform all task work at its campus in Santa Barbara, CA. UCI would perform its work activities at its campus in Irvine, CA. No modifications to existing facilities, ground disturbing activities, or changes to the use, mission, or operation of existing facilities would be required. No additional permits, licenses, or authorizations would be required.

Chemical solvents and laboratory equipment for material characterization (e.g. microscopes, powder processing equipment, material deposition equipment, etc.) would be used and handled throughout the project. All such handling would be performed in controlled-access laboratory facilities. Potential hazards associated with the completion of project activities would be mitigated through adherence to established university health and safety

policies and procedures. Protocols would include personnel training, the use of personal protective equipment, monitoring, and engineering controls. All laboratory equipment would be fitted with applicable safety components (e.g. shielding for x-ray producing instruments). Laboratory facilities would also develop and adhere to a Chemical Hygiene Plan. Any handling of hazardous chemicals would be performed under fume hoods.

Materials would be used and handled with nano-scale internal microstructures. However, no physical discrete objects would be used or handled with dimensions smaller than 1 μm . No individual nanoparticles, nanofibers or nanowires would be handled. Accordingly, no health and safety risks would be present that are commonly associated with the handling of nanomaterials (e.g. inhalation/absorption risks).

NEPA PROVISION

DOE has made a final NEPA determination.

Notes:

[Advanced Manufacturing Office](#)

[This NEPA determination does not require a tailored NEPA Provision.](#)

[NEPA review completed by Jonathan Hartman, 03/24/2020](#)

FOR CATEGORICAL EXCLUSION DETERMINATIONS

The proposed action (or the part of the proposal defined in the Rationale above) fits within a class of actions that is listed in Appendix A or B to 10 CFR Part 1021, Subpart D. To fit within the classes of actions listed in 10 CFR Part 1021, Subpart D, Appendix B, a proposal must be one that would not: (1) threaten a violation of applicable statutory, regulatory, or permit requirements for environment, safety, and health, or similar requirements of DOE or Executive Orders; (2) 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; (3) 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; (4) have the potential to cause significant impacts on environmentally sensitive resources, including, but not limited to, those listed in paragraph B(4) of 10 CFR Part 1021, Subpart D, Appendix B; (5) 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, such as those listed in paragraph B(5) of 10 CFR Part 1021, Subpart D, Appendix B.

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

The proposed action 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 10 CFR 1021.211 concerning limitations on actions during preparation of an environmental impact statement.

The proposed action is categorically excluded from further NEPA review.

SIGNATURE OF THIS MEMORANDUM CONSTITUTES A RECORD OF THIS DECISION.

NEPA Compliance Officer Signature: _____



Casey Strickland

NEPA Compliance Officer

Date: 3/24/2020

FIELD OFFICE MANAGER DETERMINATION

- Field Office Manager review not required
 Field Office Manager review required

BASED ON MY REVIEW I CONCUR WITH THE DETERMINATION OF THE NCO :

Field Office Manager's Signature: _____

Field Office Manager

Date: _____