

PMC-ND

(1.08.09.13)

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



RECIPIENT: South Dakota School of Mines and Technology

STATE: SD

PROJECT TITLE Aluminum epilayers for controlled growth and processing of flexible III-V solar cells on low-cost substrates

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
DE-FOA-0001387	DE-EE0007363	GFO-0007363-001	

Based on my review of the information concerning the proposed action, as NEPA Compliance Officer (authorized under DOE Order 451.1A), 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 federal funding to the South Dakota School of Mines and Technology (SDSMT) to improve quality, reduce costs, and enhance scalability of III-V single-junction, photovoltaic (PV) devices through the integration of pure Aluminum (Al) epitaxial layers (epilayers).

The proposed project activities would include crystal growth, characterization of materials and electro-optical properties, and fabrication and testing of III-V semiconductors on Al epilayers. Growth and characterization would take place in the Electrical-Engineering/Physics building on the SDSMT campus in Rapid City, SD. Electro-optical measurement of carrier lifetimes would take place at Lakewood Semiconductors' lab in Lakewood, CO. Supporting growth, characterization, and device processing and testing will take place in the SMFL, NPRL, and AML laboratories at Rochester Institute of Technology (RIT) in Rochester, New York. These facilities are designed for this type of research; therefore, no modifications or new permits, additional licenses and/or authorizations would be necessary. There would be no ground disturbing activities and no equipment would be installed outdoors. There would be no change in the use, mission or operation of existing facilities.

Project activities at SDSMT would require the handling of toxic and pyrophoric chemicals and gases and the use of high-temperature processes and ionizing radiation. Activities undertaken at RIT would necessitate the handling of corrosive materials. High-intensity illumination and radio-frequency emission would be necessary to activities completed at Lakewood Semiconductor. These risks would be mitigated by continuous gas monitoring, safety interlocks, protective wear, effluent scrubbers, leaded enclosures, protective eyewear, and electromagnetic shielding. All activities at existing facilities would be conducted in compliance with university, local, state, and federal safety and environmental regulations.

Waste streams generated would consist of solvent wastes such as acetone and alcohol, solid wastes collected in exhaust systems and drain traps, and normal office waste. Hazardous wastes would be collected and transferred by an external waste-disposal company in accordance with all federal, state and local environmental regulations. No siting, construction or major expansion of waste storage, disposal, recovery, or treatment actions/facilities would be

required.

Based on review of the project information and the above analysis, DOE has determined the proposed project activities would not have a significant individual or cumulative impact to human health and/or environment. DOE has determined the proposed project is consistent with actions contained in DOE categorical exclusions A9 "information gathering, analysis and dissemination," B3.6 "small-scale research and development, laboratory operations and pilot projects and is categorically excluded from further NEPA review.

NEPA PROVISION

DOE has made a final NEPA determination for this award

Insert the following language in the award:


If the Recipient intends to make changes to the scope or objective of this project, the Recipient is required to contact the Project Officer, identified in Block 15 of the Assistance Agreement before proceeding. The Recipient must receive notification of approval from the DOE Contracting Officer prior to commencing with work beyond that currently approved. If the Recipient moves forward with activities that are not authorized for Federal funding by the DOE Contracting Officer in advance of a final NEPA decision, the Recipient is doing so at risk of not receiving Federal funding and such costs may not be recognized as allowable cost share.

Note to Specialist :

Solar Energy Technologies Office
This NEPA determination does not require a tailored NEPA provision.
Review completed by Rebecca McCord 03/30/2016.

SIGNATURE OF THIS MEMORANDUM CONSTITUTES A RECORD OF THIS DECISION.

NEPA Compliance Officer Signature:

 Electronically Signed By: Kristin Kerwin
NEPA Compliance Officer

Date: 3/31/2016

FIELD OFFICE MANAGER DETERMINATION

Field Office Manager review required

NCO REQUESTS THE FIELD OFFICE MANAGER REVIEW FOR THE FOLLOWING REASON:

- Proposed action fits within a categorical exclusion but involves a high profile or controversial issue that warrants Field Office Manager's attention.
- Proposed action falls within an EA or EIS category and therefore requires Field Office Manager's review and determination.

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

Field Office Manager's Signature:

Field Office Manager

Date: