

PMC-ND
(1.08.09.13)

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



RECIPIENT: Stanford University, other team organizations: Massachusetts Institute of Technology, E. I. DuPont de Nemours & Company

STATE: CA

PROJECT TITLE : Perovskite Solar Cells for High-Efficiency Tandems

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
DE-FOA-0000990	DE-EE0006707	GFO-0006707-001	

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:

B3.15 Small-scale indoor research and development projects using nanoscale materials	Siting, construction, modification, operation, and decommissioning of facilities for indoor small-scale research and development projects and small-scale pilot projects using nanoscale materials in accordance with applicable requirements (such as engineering, worker safety, procedural, and administrative regulations) necessary to ensure the containment of any hazardous materials. Construction and modification activities would be within or contiguous to a previously disturbed or developed area (where active utilities and currently used roads are readily accessible).
---	---

Rationale for determination:

The U.S. Department of Energy (DOE) is proposing to provide federal funding to Stanford University to develop prototype solar cells.

The proposed project activities would include fabrication and characterization of perovskite solar cells and assembly of tandem solar cells. Fabrication procedures would use existing furnaces and cleanrooms. Other laboratory activities would include electrical measurements, spectroscopic tests, and other physical characterizations. These activities would occur at dedicated university and industrial laboratories at the McGehee Research Laboratory at Stanford University, the Photovoltaics Research Laboratory at MIT, and E.I. du Pont de Nemours and Company. The research may generate small amounts (tens of grams) of hazardous wastes. Titanium oxide and aluminum oxide nanoparticles would be purchased in powder form and mixed with alcohol to form a suspension that would be deposited on a solar cell by spin-coating or blade coating in well-ventilated fume-hoods or glove boxes. Approximately a gram of these materials would be used for each batch of solar cells totaling 100 grams over the course of the project. Silver nanowires would be deposited on a solar cell by spray-coating using a pneumatic airbrush-type spray nozzle inside a large enclosed box placed inside a fume hood. A few milligrams of silver nanowires would be used to make each batch of solar cells totaling one gram over the course of the project. Nanoparticle-contaminated materials would be treated as hazardous waste. At Stanford, MIT, and DuPont, hazardous waste would be stored in an Environmental Health and Safety (EH&S)-approved container, placed within a secondary containment unit, labeled and removed by EH&S personnel. Safety protocols at each laboratory would be enforced by the respective EH&S department. No physical modification of existing facilities or change in use of facilities would result from work associated with the project, and no changes in permits, licenses or authorizations would be required.

Based on review of the project information and the above analysis, DOE has determined the proposed development, fabrication and testing 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 outlined in DOE categorical exclusion B3.15 "small-scale indoor research and development projects using nanoscale materials," 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 you intend to make changes to the scope or objective of your project you are required to contact the Project Officer identified in Block 11 of the Notice of Financial Assistance Award before proceeding. You must receive notification of approval from the DOE Contracting Officer prior to commencing with work beyond that currently approved.

Note to Specialist :

Review completed by Logan Sholar on 08/11/14.

This NEPA determination does not require a tailored NEPA provision.

SIGNATURE OF THIS MEMORANDUM CONSTITUTES A RECORD OF THIS DECISION.

NEPA Compliance Officer Signature: Electronically Signed By: Lori Gray / Lori Gray Date: 8/13/2014
NEPA Compliance Officer

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: _____ Date: _____
Field Office Manager