

PMC-EF2a

(20402)

**U.S. DEPARTMENT OF ENERGY
EERE PROJECT MANAGEMENT CENTER
NEPA DETERMINATION**



RECIPIENT: University of California, Irvine

STATE: CA

PROJECT TITLE : Pyrite Iron Sulfide Solar Cells Made From Solution

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
DE-FOA-0000387	DE-EE0005324	GFO-0005324-001	0

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:

B3.6 Siting, construction (or modification), operation, and decommissioning of facilities for indoor bench-scale research projects and conventional laboratory operations (for example, preparation of chemical standards and sample analysis); small-scale research and development projects; and small-scale pilot projects (generally less than two years) conducted to verify a concept before demonstration actions. Construction (or modification) will be within or contiguous to an already developed area (where active utilities and currently used roads are readily accessible).

Rational for determination:

The University of California (UC), Irvine would demonstrate the feasibility of iron disulfide (pyrite) solar cell technology. The location of the laboratory work would take place at the Natural Sciences II Building, and Calit2 Building on Irvine, California campus with subcontract work at the National Renewable Energy Laboratory (NREL) in Golden, Colorado.

The project would be divided into nine tasks:

- Task 1) Pyrite Device Layers from Solar Ink
- Task 2) Ohmic, Low-Resistance Bottom Contact
- Task 3) p-n Heterojunction with High Open-Circuit Voltage
- Task 4) Fabricate Record Efficiency p-n Junction Solar Cell from Pyrite Ink
- Task 6) Prototype Pyrite Solar Cell with $\eta > 10\%$
- Task 7) Cell Stability
- Task 8) Bandgap Engineering
- Task 9) Prototype pyrite solar cell with $\eta > 12\%$

UC states: no additional permits are needed, and there would be no generation of air emissions associated with this work; all hazardous waste is disposed of appropriately at approved Treatment, Storage, and Disposal facilities; Safety Operating and Chemical Hygiene Plans (also in compliance with OSHA and industry standards) are in place; that NREL follows all federal regulations.

This project comprises of laboratory operations and actions to promote research and development of solar cell technology; therefore this project is categorized as CX B3.6.

NEPA PROVISION

DOE has made a final NEPA determination for this award

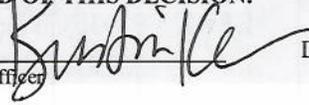
Insert the following language in the award:

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 :

EF2A written by Christopher Carusona II

SIGNATURE OF THIS MEMORANDUM CONSTITUTES A RECORD OF THIS DECISION.

NEPA Compliance Officer Signature: Kristin Kerwin  Date: 11/2/2011
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

REC'D: UNIVERSITY OF CALIFORNIA, IRVINE
PROJECT TITLE: Pyrite Iron Sulfide Solar Cells Made From Sulfur
FIELD OFFICE MANAGER DETERMINATION
NCO REQUESTS THE FIELD OFFICE MANAGER REVIEW FOR THE FOLLOWING REASON:
FIELD OFFICE MANAGER'S SIGNATURE: _____ DATE: _____
FIELD OFFICE MANAGER

NEPA PROVISION
DDE has made a final NEPA determination for this project.
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 Final Assistance Award before proceeding. You must receive notification or approval from the DDE Contracting Officer prior to commencing work beyond that currently approved.
For a Specialist
EPA written by Christopher Carbone II

The project comprises of laboratory operations and actions to provide research and development of solar cell technology, therefore this project is categorized as CX-B2.4.
NREL follows all federal regulations.
Operating and Chemical Hygiene Plans (also compliance with OSHA and industry standards) are in place; that work all hazardous waste is disposed of appropriately at approved Treatment, Storage, and Disposal facilities. Safety UG status: no additional permits are needed, and there would be no generation of air emissions associated with this.
Task 1) Pyrite Device Layout from Solar Ink
Task 2) Organic Low-Resistance Bottom Contact
Task 3) p-n Heterojunction with High Open-Circuit Voltage
Task 4) Fabricate Record Efficiency p-n Junction Solar Cell from Pyrite Ink
Task 5) Prototype Pyrite Solar Cell with $\eta > 10\%$
Task 6) Bandgap Engineering
Task 7) Cell Stability
Task 8) Prototype pyrite solar cell with $\eta > 12\%$
The project would be divided into nine tasks:
California campus with subcontract work at the National Renewable Energy Laboratory (NREL) in Golden, Colorado. The location of the laboratory work would take place at the Natural Sciences II Building and Cells Building on Irvine, The University of California (UC), Irvine would demonstrate the feasibility of iron disulfide (pyrite) solar cell technology. National for determination.