

PMC-ND

(1.08.09.13)

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

**RECIPIENT:** Georgia Institute of Technology**STATE:** GA

PROJECT TITLE: Cellulose-Chitin Composites for Performance Advantaged Barrier Packaging Bioproducts

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
DE-FOA-0001916	DE-EE0008494	GFO-0008494-001	GO8494

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.

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 Georgia Institute of Technology (GIT) to design, develop, and characterize novel performance advantaged bioproduct (PABP) barrier materials based on chitin and cellulose with improved permeability relative to a petroleum-derived poly(ethylene terephthalate) (PET) film standard, in order to inform potential commercial development of renewable natural resources.

The proposed project is aimed at advancing the technology of producing bio-based PET replacements for food or electronics packaging using shellfish waste and cellulose nanocrystals and nanofibrils as feedstocks. Project work would be limited to laboratory research involving preliminary data verification, compositional analyses, process development, and prototype fabrication in order to demonstrate the optimization of key property requirements. Specifically, associated activities would include bench-scale feedstock processing, fabrication of spray-coated chitin and cellulose films, testing of film mechanical and barrier properties, and encapsulation of electrochromic devices by the developed films.

All project activities would occur within purpose-built research laboratories located on the GIT campus (Atlanta, GA). No change in the use, mission or operation of existing facilities would arise out of this effort. GIT has all applicable permits in place, and would not need additional permits for the proposed activities.

The proposed project would utilize less than approximately 100 kg each of commercially available forest-derived cellulose (wood pulp from hardwood pine trees) and ocean-derived chitin (crab or shrimp shells that are waste projects of the foodservice industry). Lesser quantities of acids, bases, and solvents would be used during the course of project activities, which would also involve the preparation of nanoscale materials. All such handling would be confined to laboratories equipped to contain hazardous volatile solvents or airborne particulates. The recipient adheres to all pertinent health and safety protocols for the handling of hazardous materials and requires the use of personal protective equipment in accordance with established GIT Environmental Health and Safety Office policies. GIT has standard waste collection and disposal procedures in place for waste management and disposal to comply with federal, state, and local environmental regulations.

Based on the review of the proposal, DOE has determined the proposal fits within the class of action(s) and the integral elements of Appendix B to Subpart D of 10 CFR 1021 outlined in the DOE categorical exclusion(s) selected above. DOE has also determined that: (1) there are no extraordinary circumstances (as defined by 10 CFR 1021.410(2)) related to the proposal that may affect the significance of the environmental effects of the proposal; (2) the proposal has not been segmented to meet the definition of a categorical exclusion; and (3) the proposal is not connected to other actions with potentially significant impacts, related to other proposals with cumulatively significant actions, or an improper interim action. This proposal 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 :

Bioenergy Technologies Office

This NEPA determination does not require a tailored NEPA Provision.

NEPA review completed by Whitney Doss, 10/18/2018

SIGNATURE OF THIS MEMORANDUM CONSTITUTES A RECORD OF THIS DECISION.

NEPA Compliance Officer Signature: _____



Casey Strickland

NEPA Compliance Officer

Date: 10/23/2018

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: _____