

U. S. DEPARTMENT OF ENERGY  
OFFICE OF SCIENCE -- CHICAGO OFFICE

NATIONAL ENVIRONMENTAL POLICY ACT (NEPA)  
ENVIRONMENTAL EVALUATION NOTIFICATION FORM

To be completed by "Applicant," i.e., organization receiving funds and/or implementing Federal Actions as defined by 40 CFR § 1508.18. For assistance, refer to "Instructions for Preparing SC-CH F-560, Environmental Evaluation Notification Form."

Solicitation/Award No. (if applicable): DE-SC001299

Organization Name: Massachusetts Institute of Technology (MIT)

Title of Proposed Project/Research: Solid-State Solar-Thermal Energy Conversion Center (S3TEC)

Total DOE Funding/Total Project Funding: 18,571,547.83 / 18,571,547.83

I. Project Description (use explanation page if additional space is required):

A. Proposed Project/Action (if applicable, delineate Federally funded/Non-Federally funded portions)

The Center aims to address the DOE's grand challenges, connecting nanoscale materials to gigawatts electricity, by advancing the basic science underpinning direct energy conversion technologies, through discovering materials that meet the needs of applications in terms of performance, cost, and reliability. The S3TEC Center's vision is to create an intellectual base for advancing the fundamental science of energy-carrier coupling and transport for thermal-to-electrical energy conversion, based on thermoelectric (TE) and thermophotovoltaic (TPV) technologies, and thermogalvanic (TG) technologies. The fundamental knowledge gained at the S3TEC Center is being successfully used to design new materials and devices to achieve leaps in efficiency of these technologies.

B. Would the project proceed without Federal funding?

Yes No

If "yes," use explanation page.

II. Description of Affected Environment:

The new technologies being developed at the S3TEC Center based on direct conversion of renewable solar and terrestrial thermal energy into electricity will help to reduce the use of traditional fossil fuels and thus to reduce CO2 emission into the atmosphere.

III. Preliminary Questions:

- |   | Yes                      | No                                  |
|---|--------------------------|-------------------------------------|
| A. <u>Is the DOE-funded work routinely administrative or <i>entirely</i> advisory or a "paper study?"</u> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

***If "Yes", ensure that the description in Section I reflects this and go directly to Section V.***

- B. Is there any potential whatsoever for:

***Provide an explanation for each "Yes" response.***

- |  | Yes                      | No                                  |
|--|--------------------------|-------------------------------------|
| 1. Work to be performed outdoors?  | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 2. Major modification of a building interior?  | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 3. Threat of violation of applicable statutory, regulatory, or permit requirements for environment, safety, and health?        | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 4. Siting, construction or major expansion of waste treatment, storage, or disposal facilities?                                | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 5. Disturbance to hazardous substances, pollutants, or contaminants preexisting in the environment?                            | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 6. The presence of any environmentally-sensitive resources?  | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 7. Potential for high consequence impacts to human health or the environment?  | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 8. The work being connected to another existing/proposed activity that could potentially create a significant impact?          | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 9. Nearby past, present, and/or reasonably foreseeable future actions such that collectively significant impacts could result? | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 10. Scientific or public controversy over whether impacts could be significant?  | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

***If "No" to ALL Section III.B. questions, go directly to Section V.***

IV. Potential Environmental Effects:

***Provide an explanation for each "Yes" response.***

- A. Sensitive Resources: Could the proposed action potentially result in changes and/or disturbances to any of the following resources?

- |  | Yes                      | No                       |
|--|--------------------------|--------------------------|
| 1. Threatened/Endangered Species and/or Critical Habitats                          | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. Other Protected Species (e.g., Burros, Migratory Birds)                         | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. Sensitive Environments (e.g., Tundra/Coral Reefs/Rain Forests)                  | <input type="checkbox"/> | <input type="checkbox"/> |
| 4. Cultural or Historic Resources  | <input type="checkbox"/> | <input type="checkbox"/> |
| 5. Important Farmland  | <input type="checkbox"/> | <input type="checkbox"/> |
| 6. Non-Attainment Areas for Ambient Air Quality Standards                          | <input type="checkbox"/> | <input type="checkbox"/> |
| 7. Class I Air Quality Control Region  | <input type="checkbox"/> | <input type="checkbox"/> |
| 8. Special Sources of Groundwater (e.g. Sole Source Aquifer)                       | <input type="checkbox"/> | <input type="checkbox"/> |
| 9. Navigable Air Space   | <input type="checkbox"/> | <input type="checkbox"/> |
| 10. Coastal Zones  | <input type="checkbox"/> | <input type="checkbox"/> |
| 11. Areas with Special National Designation (e.g. National Forests, Parks, Trails) | <input type="checkbox"/> | <input type="checkbox"/> |
| 12. Floodplains and/or Wetlands  | <input type="checkbox"/> | <input type="checkbox"/> |

B. Regulated Substances/Activities: Would the proposed action involve any of the following regulated items or activities?

	Yes	No
13. Natural Resource Damage Assessments	<input type="checkbox"/>	<input type="checkbox"/>
14. Invasive Species or Exotic Organisms	<input type="checkbox"/>	<input type="checkbox"/>
15. Noxious Weeds	<input type="checkbox"/>	<input type="checkbox"/>
16. Clearing or Excavation (indicate if greater than one acre)	<input type="checkbox"/>	<input type="checkbox"/>
17. Dredge or Fill (under Clean Water Act, Section 404, greater than one acre)	<input type="checkbox"/>	<input type="checkbox"/>
18. Noise (in excess of regulations)	<input type="checkbox"/>	<input type="checkbox"/>
19. Asbestos Removal	<input type="checkbox"/>	<input type="checkbox"/>
20. Polychlorinated biphenyls (PCBs)	<input type="checkbox"/>	<input type="checkbox"/>
21. Import, Manufacture, or Processing of Toxic Substances	<input type="checkbox"/>	<input type="checkbox"/>
22. Chemical Storage/Use	<input type="checkbox"/>	<input type="checkbox"/>
23. Pesticide Use	<input type="checkbox"/>	<input type="checkbox"/>
24. Hazardous, Toxic, or Criteria Pollutant Air Emissions	<input type="checkbox"/>	<input type="checkbox"/>
25. Liquid Effluents	<input type="checkbox"/>	<input type="checkbox"/>
26. Spill Prevention/Surface Water Protection	<input type="checkbox"/>	<input type="checkbox"/>
27. Underground Injection	<input type="checkbox"/>	<input type="checkbox"/>
28. Hazardous Waste	<input type="checkbox"/>	<input type="checkbox"/>
29. Underground Storage Tanks	<input type="checkbox"/>	<input type="checkbox"/>
30. Radioactive or Radioactive Mixed Waste	<input type="checkbox"/>	<input type="checkbox"/>
31. Radiation Exposure	<input type="checkbox"/>	<input type="checkbox"/>
32. Nanoscale Materials	<input type="checkbox"/>	<input type="checkbox"/>
33. Genetically Engineered Microorganisms/Plants or Synthetic Biology?	<input type="checkbox"/>	<input type="checkbox"/>
34. Ozone Depleting Substances	<input type="checkbox"/>	<input type="checkbox"/>
35. Greenhouse Gas Generation/Sustainability	<input type="checkbox"/>	<input type="checkbox"/>
36. Off-Road Vehicles	<input type="checkbox"/>	<input type="checkbox"/>
37. Biosafety Level 3-4 Laboratory	<input type="checkbox"/>	<input type="checkbox"/>

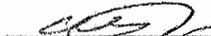
C. Other Relevant Information: Would the proposed action involve the following?

	Yes	No
38. Existing, Modified, or New Federal/State Permits	<input type="checkbox"/>	<input type="checkbox"/>
39. Disproportionate Nearby Presence of Minority and/or Low Income Populations	<input type="checkbox"/>	<input type="checkbox"/>
40. Action/Involvement of Another Federal Agency (e.g. license/permit, funding, approval)	<input type="checkbox"/>	<input type="checkbox"/>
41. Action of a State Agency in a State with NEPA-type law	<input type="checkbox"/>	<input type="checkbox"/>
42. Public Utilities/Services	<input type="checkbox"/>	<input type="checkbox"/>
43. Depletion of a Non-Renewable Resource	<input type="checkbox"/>	<input type="checkbox"/>
44. Other Pertinent Information Which Could Impact Human Health or the Environment	<input type="checkbox"/>	<input type="checkbox"/>

V. Applicant Certification that to the best of their knowledge all information provided on this form is accurate:

	Yes	No
Does this disclosure contain classified, confidential, or other exempt information that DOE would not be obligated to disclose pursuant to the Freedom of Information Act?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

A. Organization Official (Name and Title): Prof. Gang Chen

Signature:  Date: 09-12-2014

e-mail: gchen2@mit.edu Phone: 617-253-3523

B. Optional Secondary Approval (Name and Title): \_\_\_\_\_

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

**Remainder to be completed by DOE**VI. DOE Concurrence/Recommendation/Determination:A. DOE Project Director/Program Manager or Contract/Grant Management Specialist:

Has the Applicant completed the Form correctly?

Yes



No



Does an existing Generic Categorical Exclusion apply?



If yes, indicate:

Name and Title: Tanga Baylor, Contract SpecialistSignature: Tanga BaylorDate: 9-17-14B. DOE NEPA Team Review:

Is the class of action identified in the DOE NEPA Regulations (Appendices A-D to Subpart D (10 CFR § 1021))?

Yes



No

If yes, specify the class(es) of action: B3.6Name and Title: Peter SiebachSignature: Peter SiebachDate: 9/17/2014C. DOE Counsel (if requested):

Name and Title: \_\_\_\_\_

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

D. DOE NEPA Compliance Officer:

The preceding pages are a record of documentation required under DOE Final NEPA Regulation, 10 CFR § 1021.400.



Action may be categorically excluded from further NEPA review. I have determined that the proposed action meets the requirements for Categorical Exclusion referenced above.



Action requires approval by Head of the Field Organization. Recommend preparation of an Environmental Assessment.



Action requires approval by Head of the Field Organization or a Secretarial Officer. Recommend preparation of an Environmental Impact Statement.

Comments/limitations if any:

NEPA Compliance Officer:Name: Peter SiebachSignature: Peter SiebachDate: 9/17/2014