

Opportunity Title: Thermoradiative Energy Conversion Technology

Opportunity Reference Code: 0033-NPP-NOV23-GRC-TechDev

Organization National Aeronautics and Space Administration (NASA)

Reference Code 0033-NPP-NOV23-GRC-TechDev

Application Deadline 11/1/2023 6:00:59 PM Eastern Time Zone

Description The thermoradiative cell is a new concept for converting heat energy into electrical power, using solid-state physics principles similar to the operation of a photovoltaic cell. The technology has possible application for radioisotope power conversion for space applications, but to date most of the theoretical analyzes looked only at ideal performance, and the real-world efficiency loss mechanisms are not well understood, in particular, the loss of energy to infrared emissivity.

Desired is research on understanding and improving the efficiency of thermoradiative cell technology, including understanding the losses under real-world conditions.

Some references are : Rune Strandberg (2015a) "Theoretical efficiency limits for thermoradiative energy conversion," J. Appl. Phys., 117, 055105; <https://doi.org/10.1063/1.4907392>

Nicholas J. Ekins-Daukes; Muhammad H. Sazzad; Lamees Al Kiyumi; Michael P. Nielsen; Peter Reece; Alex Mellor; Martin A. Green; and Andreas Pusch (2020) "Generating Power at Night Using a Thermoradiative Diode, How is this Possible?" 47th IEEE Photovoltaic Specialists Conference, 15 June-21 Aug. 2020. <https://doi.org/10.1109/PVSC45281.2020.9300980>

Location:

Glenn Research Center
Cleveland, Ohio

Field of Science:Technology Development

Advisors:

Geoffrey A. Landis
Geoffrey.Landis@nasa.gov
216-433-2238

Timothy J Peshek
timothy.j.peshek@nasa.gov
216-433-2386



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- Eligibility Requirements**
- **Citizenship:** LPR or U.S. Citizen
 - **Degree:** Doctoral Degree.