New Concepts in Solar and Thermal Radiation Conversion II

This conference has an open **call for papers:**

SUBMIT AN ABSTRACT
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Submission guidelines for Authors and Presenters

Important Dates

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Abstract Due:
30 January 2019

Author Notification:
8 April 2019

Manuscript Due Date:
17 July 2019

Conference Committee

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Call for Papers

This conference centers on discovering and exploring novel concepts in optics, photonics, and plasmonics with significant potential to improve the performance of solar and thermal energy conversion devices, as well as larger systems with significant sustainable energy components. Recent developments in material science, nanophotonics, plasmonics, and metasurfaces make this a uniquely promising time to develop new capabilities in this direction. These new capabilities can then have direct applications in a range of fields, including but not limited to solar photovoltaics, sustainable food-energy-water systems, energy-efficient lighting, infrared sources, and the thermophotovoltaic generation of electricity from heat. Topics of relevance in thermophotovoltaics include design of advanced photonic crystals effective in high-temperature environments, management of excess heat in the photovoltaic cell, enhancement of the low-bandgap photovoltaic cells, and integrating various components into high-performance systems. Another key area requiring careful control of thermal radiation is radiative cooling, whether for terrestrial or space-based applications. Radiative cooling allows both for daytime passive cooling above and beyond standard convective processes, as well as below-ambient cooling for night time power generation. Optics-related research impacting other parts of energy systems is also of interest.

This conference will primarily cover the following areas:

- nanophotonic and nanoplasmonic materials and structures for solar cells
- optical characterization of aging in solar cells
- advanced solar conversion mechanisms, such as tandem or multijunction structures, intermediate bands, hot carrier effects, and multi-exciton generation
- novel photonic concepts to reduce photon entropy (e.g. angular restriction mechanisms) or cool PV devices (e.g. radiative cooling)
- spectral conversion mechanisms such as up- and down conversion
- selective solar absorbers for generating hot water and higher-grade heat for solar thermal energy generation and storage
- selective thermal emitters for tailoring the wavelengths, angles, and polarizations of thermal radiation, particularly at elevated temperatures
- thermophotovoltaics for efficiently converting medium- to high-temperature heat into electricity
- radiative cooling to increase the ability of systems near room temperature to reach ambient or below ambient temperatures via long-wavelength infrared thermal emission
- incorporation into larger system applications with photonic challenges, such as building-integrated photonics, unmanned aerial vehicles, sustainable food-energy-water systems.

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