Heliostat Consortium Seminar Series

Brought to you by the Resource, Training, and Education (RTE) topic area

Dr. Guangdong Zhu
Guangdong.Zhu@nrel.gov
303-275-4497

Senior Researcher,
National Renewable
Energy Laboratory (NREL)

Host: Dr. Rebecca Mitchell

Title: An Undervalued Foundation for Heliostat Technologies: Optical Characterization, Modeling, and Measurement

When: February 16th
1-2 PM MST

Zoom:
https://nrel.zoomgov.com/j/1611110823?pwd=Z0NQTlVmZ2NhSXZmbnIwNnhRZWNWQT09

Abstract:

Optical characterization, modeling, and measurement is a fundamental element of heliostat technology development and deployment but has been undervalued in the past. This talk will provide a quick overview on the optical aspects of heliostat technology, which include:

- Sun shape and its beam spread due to various opto-mechanical errors.
- Mirror reflectance and its degradation due to aging and soiling.
- Ray-trace modeling software
- Measurement of opto-mechanical errors.
- Needs of standards in defining a full suite of optical characterization and requirements for metrology development.

The talk will also provide a personal perspective on the metrology development within HelioCon.

Bio:

Dr. Guangdong Zhu has been a senior researcher in the Concentrating Solar Power (CSP) and Geothermal Technology programs at the National Renewable Energy Laboratory (NREL) since 2010. At NREL, he has been leading research efforts related to solar collector optical characterization, linear Fresnel technology, and renewable energy hybridization. He is the executive director of the newly formed 5-year Heliostat Consortium co-led by NREL and Sandia National Labs, partnering with ASTRI. He is the associate editor of the ASME Journal of Energy Resources Technology since 2019. He served as the technical/general program chair for ASME Energy Sustainability international conference from 2017 - 2020. He won NREL's President's award and Outstanding New Partnership Award in 2016. He has published over 40 peer-reviewed journal/conference papers and given numerous invited presentations at various research institutes. Dr. Zhu obtained his Ph.D. from the University of New Mexico in 2006.