Dr. Guangdong Zhu has been a senior researcher in the concentrating solar power (CSP) program and geothermal technology program 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 won NREL’s President’s award and Outstanding New Partnership Award in 2016. Dr. Zhu obtained his Ph.D. from the University of New Mexico.

Abstract:
Concentrating solar power (CSP) is the “other” solar technology that utilizes large aperture mirror panels to concentrate sunlight and convert solar energy into thermal energy and subsequently, electricity through thermodynamic cycles. CSP can be naturally coupled with low-cost thermal energy storage and provide valuable dispatchability to a grid with high penetration of non-flexible renewable energy such as photovoltaic and wind power. This seminar will provide an overview on the trend of CSP technology development and then focus on the speaker’s latest research work in this area: the importance of solar optics in solar collector design and performance evaluation. Topics presented include: electricity generation through a thermodynamic cycle; combined heating & cooling system at a commercial scale; water desalination; green fuel generation through bioenergy/solar hybrid systems; combining CSP technologies and other renewable energy technologies to sustain off-grid communities.