

## **The Thermoelectric Effect under Photon Excitation**

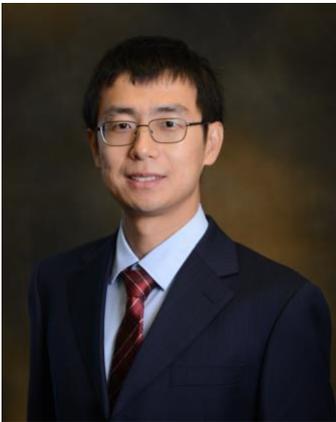
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**Abstract:** Thermoelectric phenomena allow energy conversion between heat and electricity, which can be used in energy harvesting, solid state refrigeration, and temperature regulation. The physical origin of these phenomena are well understood with semi-classic theories such as the Boltzmann transport theory. Carefully conducted experiments often reveal results as predicted by such theories. Nonetheless, carrier transport not only happens when the system is near thermal equilibrium, as for the case of thermoelectric phenomena, but also happens in excited systems with electrons far from thermal equilibrium. And this draws our interest over the past a few years. In this talk we will discuss the characteristic, the physical origin, and measurement strategies of the thermoelectric effect under photon excitation (which is one version of the photo-thermoelectric phenomena). We will discuss a few case studies, what can these results tell us about the materials, and potential applications. There are still much to understand with this effect and we hope this discussion could stimulate more interest and applications as well.



**Biography:** Heng Wang is an assistant professor at department of Mechanical, Materials and Aerospace Engineering, Illinois Institute of Technology. He received his B.S. in materials science and engineering from Tsinghua University, China, and his PhD in materials science from California Institute of Technology. Before joining IIT he worked as a postdoctoral researcher at the Molecular Foundry, Lawrence Berkeley National Lab. He has over ten years of research experience in thermoelectric materials, physics, and devices, with more than 13000 citations. His current research interests include high-performance thermoelectric materials, as well as device design, manufacturing, and new applications. In addition, he is particularly interested in the interplay of photoelectric and thermoelectric phenomena.