華中科技大學
能源与动力工程学院
SCHOOL OF ENERGY AND POWER ENGINEERING
HUAZHONG UNIVERSITY OF SCIENCE AND TECHNOLOGY

能源学院第四十三期铭师讲堂

—— 纳米传热实验室邀请报告

Fundamental understanding of nanoscale heat transfer for thermal conductivity manipulation

主讲嘉宾：**田芝婷**

报告时间：2017年5月17日（星期三）15:30-16:30

报告地点：主校区动力楼201会议室

嘉宾介绍: 2014年起任弗吉尼亚理工学院机械工程系助理教授，2014年在MIT机械系陈刚教授的指导下获得博士学位，2009年获得宾汉顿大学机械工程硕士学位，2007年获得清华大学工程物理学学士学位。她的团队同时利用模拟手段（从头计算方法和经典计算方法）和实验手段（超快激光和X射线技术）来对纳米尺度热输运的机理进行研究。她最近获得的奖项有2017年“院长杰出新任助理教授奖”、2017年“3M非终身教师奖”、2016年弗吉尼亚理工学院“每周学者”以及2016年“弗吉尼亚理工学院本科生研究顾问奖”。

主讲内容: Understanding and manipulating heat transfer to our advantages are essential to intentionally design energy-efficient devices and systems and limit deleterious effects of high or low temperatures on system performance. Nano-engineering offers unique opportunities to obtain previously unachievable properties for diverse applications, ranging from thermoelectric energy conversion and thermal insulation that demands ultra-low thermal conductivity to micro-electronics cooling that, in contrast, desires ultra-high thermal conductivity. Meanwhile, nano-engineering also imposes challenges in the scientific understanding because continuum theories break down at such small length scales. Despite significant effort, in-depth understanding of basic thermal transport processes at the nanoscale is limited, impeding the development of novel thermal applications. In this talk, I will present our computational and experimental efforts to deepen our fundamental understanding of nanoscale thermal transport processes and unveil their direct impacts on macroscopic thermal conductivity. I will show examples where we push the lower and higher boundaries of thermal conductivity as well as achieve switchable thermal conductivity and thermal rectification in organic materials.