東京大学 THE UNIVERSITY OF TOKYO

GMSI Graduate Program for Mechanical Systems Innovation

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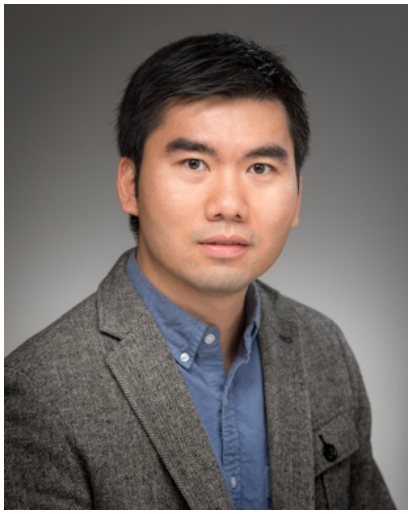
Thermal Transport in Polymers and across Their Interfaces with Solids

Dorini Family Associate Professor Tengfei Luo

Aerospace and Mechanical Engineering,
University of Notre Dame

Date: Wednesday, 6 June. 2018, 14:00-15:00
Venue: Faculty of Engineering Bldg. 2, 3F, 31A

Abstract:
Polymers are usually regarded as thermal insulators although they are widely used in heat transfer-critical applications, such as heat exchangers and thermal management packaging for electronics. In this talk, I will discuss several aspects of maniputating and enhancing thermal transport in polymers and across their interfaces with solids. I will first discuss how the molecular level details can be related to the macroscopic thermal conductivity of polymers in both the fiber form and the bulk amorphous state. The results provide useful information to the understanding of the structure-thermal conductivity relation for these materials. Then, I will present several general strategies on how to enhance thermal transport between polymer and solids by properly engineering the surface functionalization. In this presentation, both atomistic simulation results and experimental results will be discussed. These results may provide useful guidance to designing and engineering polymers and their composites to achieve high thermal conductivity.



Biology:
Dr. Tengfei Luo is an Associate Professor and the Dorini Family Collegiate Chair at the Department of Aerospace and Mechanical Engineering of Notre Dame. He received his PhD from Michigan State University in Mechanical Engineering in 2009 and worked as a postdoctoral associate in MIT until 2012. At Notre Dame, he runs the Molecular-level Energy and Mass Transport (MEMT) lab. His research interests include atomistic simulations and experimental study of nanoscale heat transfer and molecular level mass transfer. Of special interest to his group are thermal transport in low-dimensional materials, across material interfaces, first-principle characterization of phonon transport, and pump-probe measurement of thermal conductivity and interfacial thermal conductance. He is the recipient of a DuPont Young Professor Award (2016), a DARPA Young Faculty Award (2015), an ACS PRF Doctoral New Investigator (2013), an Air Force Summer Faculty Fellowship (2015) and a Best Paper Award of the Society-Wide Micro and Nanotechnology Forum at ASME IMECE (2015).

主催: 東京大学大学院工学系研究科専攻間横断型教育プログラム 機械システム・イノベーション（GMSI）
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未来社会空間の創生 国際卓越大学院（WINGS iFS）

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