

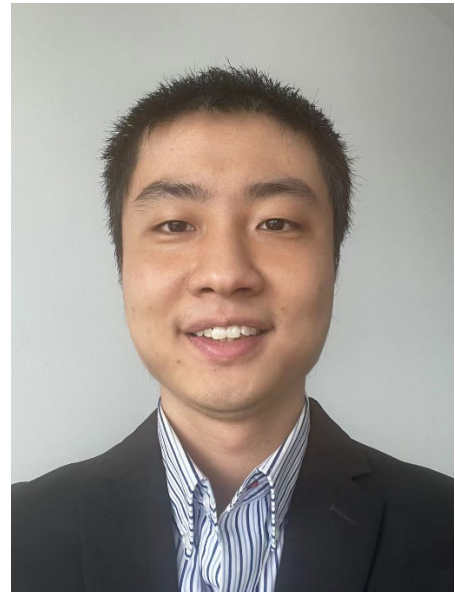
Peicheng Li

*Energy Levels and Charge Transport in
Host-Dopant Organic
Semiconductors*

Thursday, August 12, 2021

10:30 am 1060 FMCRB

Host: Prof. Stephen Forrest



Abstract:

Organic light-emitting diode (OLED) has become one of the mainstream display technologies due to its excellent image quality and flexible form factor. Current challenge in OLED industry is to achieve highly efficient and stable blue devices. Efficiency and lifetime of OLEDs can be boosted through having a balanced electron and hole transport in the emissive layer of OLEDs. The emissive layer consists of an organic host doped with an emissive dopant molecule. Charge transport process in this material system is dependent on the energy level alignment at the host-dopant interface. However, both energy level alignment and charge transport process are not fully understood in the community. In this presentation, I will first show a universal rule to predict energy level alignment at host-dopant interfaces. After that, I will talk about the impact of interface energy disorder in amorphous organic semiconductors on the host-dopant energy level alignment. Next, I will present charge transport mechanisms, i.e., charge detrapping and percolation, in host-dopant organic semiconductors. Lastly, I will discuss about charge injection into host-dopant organic semiconductors.

Peicheng Li is a PhD candidate in the Department of Materials Science and Engineering at the University of Toronto. His research focuses on material and device physics of organic optoelectronics. He has won a few awards including the Alexander Graham Bell Canada Graduate Scholarship.

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