

Molecular Materials and Devices

by

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Date : 5 June 2017 (Monday)

Time : 3:30 p.m.

Venue: OEM905
Oen Hall Building
Ho Sin Hang Campus
Hong Kong Baptist University

All Interested are Welcome

Abstract

Molecular materials are those constituted by weak intermolecular interactions (e.g., π - π interaction, hydrogen bonding, and van der Waals force) between individual component molecules. In contrast, the conventional semiconducting materials are constituted by strong intermolecular interactions (e.g., covalent bonding, metallic bonding and ionic bonding). They possess different characteristics in condensed states, physical properties and applications. Molecular materials have a lot of advantages, such as many varieties, low cost, flexibility and solution processability, and have wide potential applications in organic nonlinear optics, organic electroluminescence, organic/polymeric solar cells, organic field-effect transistors, and sensors. However, the optoelectronic property and stability for molecular materials generally need further improved.

In this presentation, I will report the controllable synthesis of new π - π conjugated small molecules, polymers and graphene. Fabrication of field-effect transistors and investigation of their electronic properties are also involved.