Tentative Outline

Novel and Advanced Organic Semiconductor Materials and Devices

Guest Editors: Professor Jin Bo, Professor Muhammad Zubair Iqbal

Aims & Scope:

Organic semiconductors have been attracting numerous attentions for their multiple advantages such as low-cost fabrication, high flexibility, light-weight, easy processing, and large-area fabrication. These unique advantages have aroused widespread interest in use in several fields, such as organic photovoltaics (OPVs), organic photodetectors (OPDs), organic field-effect transistors (OFETs), and organic light-emitting diodes (OLEDs), and so forth. The performance of organic semiconductors is strongly dependent on composition and properties of the semiconductor materials, fabrication procedures, processing parameters, and device structures, which leads to the precise control of the photophysical properties of semiconductors device. So far, numerous n-type and p-type conjugated small molecules and polymers have been designed and synthesized for acceptors and donors to achieve high performance semiconductors. Subsequently, the fabrication procedure and device structures have been developed with the rapid improvement of organic semiconductors materials. The extensively used fabrication techniques to implement these semiconductor devices include variants of physical/chemical vapor deposition, spin coating, chemical and electrochemical processing, and inkjet printing. However, nanostructures of semiconductor devices fabricated from various techniques may result in different structures, which would have influence on the properties of materials and device performance. Consequently, complementary modeling studies also have been performed to support the evidence experimentally to deep understand the relationship between material structure, properties and device performance. However, some strong limitations of organic semiconductors still drastically hinder further its commercialization, such as the high cost of the current materials, the unclear working mechanism, the performance and stability of the semiconductor devices.

In this special issue, the papers propose to tackle above-mentioned obstacles in organic semiconductor filed and shed light on designing novel materials and device structure to advance the development of organic semiconductors.

Keywords: Organic Semiconductor materials; Organic Semiconductor Devices; Organic Chemistry.

Sub-topics:

The subtopics include but are not limited to the following:

- Challenges in design and synthesis of organic or organic hybrid semiconductor materials
- Deposition techniques for organic semiconductor devices
- Interfacial engineering for organic semiconductor devices
- Characterization methods for organic semiconductors devices
- Device physics of organic semiconductors
- Modeling studies for organic semiconductors
- Integration and technology for large areas and flexible organic semiconductors

Schedule:

- Manuscript submission deadline: March 31, 2021
- Revision Due: May 31, 2021
- Announcement of acceptance by the Guest Editors:
  June 15, 2021

- ✧ Final manuscripts due: July 1, 2021

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