



Surface-directed Molecular Assembly in Organic Electronics

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The field of organic electronics such as organic light-emitting diodes (OLEDs), organic photovoltaics (OPVs), and organic field effect transistors (OFETs) has been developed vastly in the last three decades because they are mechanically flexible, light weight, versatile in chemical design and synthesis, and can be easily processed as well. In such organic electronic devices, microstructures of organic semiconductor thin films and interfacial properties of the devices are key factors to the performance and lifetime of the devices. Controlling the surface characteristics of underlying substrates can govern the mesoscale and/or nanoscale ordering of the organic molecules assembled on them, and thus significantly affects the organic electronic devices on the whole. Here, I will discuss the essence of the surface-directed molecular assembly approaches for controlling the growth of organic semiconductor molecules on gate dielectrics and electrodes to achieve high performance OFETs and OPVs.