Organic and Bio-Organic Optoelectronic Devices

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Abstract

Recent developments on conjugated polymer based photovoltaic diodes and photoactive organic field effect transistors are discussed. The photophysics of such devices is investigated. Potentially interesting applications include sensitization of the photoconductivity and photovoltaic phenomena as well as photoresponsive and/or photoemitting organic field effect transistors. In addition, organic/inorganic nanoparticle based "hybrid" solar cells will be discussed. This talk gives an overview of materials' aspect, charge-transport, and device physics of organic diodes and field-effect transistors.

Furthermore, due to the compatibility of carbon/hydrogen based organic semiconductors with organic biomolecules and living cells there can be a great opportunity to integrate such organic semiconductor devices with the bio-medicine. Biocompatible and biodegradable semiconductor devices will greatly reduce waste problem and help sustainability.