



Organic "Plastic" Optoelectronic Devices

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Recent developments on conjugated polymer based photovoltaic diodes and photoactive organic field effect transistors (photOFETs) are discussed. The photophysics of such devices is based on the photoinduced charge transfer from donor type semiconducting conjugated polymers onto acceptor type conjugated polymers or acceptor molecules such as Buckminsterfullerene, C₆₀. Potentially interesting applications include sensitization of the photoconductivity and photovoltaic phenomena as well as photoresponsive organic field effect transistors (photOFETs). Furthermore, organic polymeric/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 (biOFETs) with the living organisms. In general the largely independent bio/lifesciences and information technology of today, can be thus bridged in an advanced cybernetic approach using organic semiconductor devices embedded in bio-lifesciences. This field of bio-organic electronic devices is proposed to be an important mission of organic semiconductor devices.

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