Organic Semiconductor Optoelectronics

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Abstract

Organic semiconductors are a remarkable class of materials because they combine novel semiconducting optoelectronic properties with simple fabrication and the scope for tuning properties by changing their chemical structure. Their properties are very different from, and complementary to, their inorganic counterparts. For example they can be deposited from solution to make working electronic and optoelectronic devices. Advances in materials have enabled a wide range of advances in devices, and in the domain of optoelectronics, organic light-emitting diodes (OLEDs), solar cells and (optically pumped) lasers have been demonstrated. After an introduction to these materials, this talk will show how advances in this field are leading to new applications. In particular it will show how organic light emitting materials can be used for applications ranging from medicine to minefields. It will show how OLEDs can be used to treat many skin cancers, how organic lasers can be used to detect explosive vapour #9for humanitarian demining) and how organic semiconductors can be used for visible light communication.