

OPC as Imaging Materials – Glorious Past and Promising Future

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Abstract

About that time of Nobel Prize 2000 in Chemistry for the discovery and development of conductive polymers, a group of organics called as organic semiconductors began to attract a great deal of attention for the electronic materials. Past three decades, organic electronic materials, namely “Organic Photoconductors, OPCs, achieved a great success as electrophotographic photoreceptors of copying machines and laser beam printers after many years' efforts. The deep understandings on the charge generation and transport as well as charge injection at the interface of organic layers in organic photoreceptors established the fundamentals of electronic processes in a wide range of organic materials, which are consisted of inherently insulating molecular assembly. Recently, on a flag of “Organic Electronics”, these materials are thrown into many electronic devices such as organic electroluminescent EL devices, and more recently, organic FET transistors, organic memories, and solid state organic solar cells. Especially, great efforts have been devoted to achieve paper-like displays or electronic papers, exploiting their advantages for large area, flexible devices.

In this talk, the historical progresses of OPCs in past 30 years will be reviewed briefly and let us consider what we are now aiming at

with organic electronic materials, which are generally said to be inferior to inorganic silicon semiconductors in their electrical properties, and find a scenario to an advanced imaging world drawn with organic electronics. If the time permits, our recently developed novel opto-electronic device combining an organic EL diode and organic photo-electrical conversion layer will be introduced.

Author Biography

Masaaki Yokoyama is a professor at Osaka University. He received his B.Sc. in 1966, M.Sc. in 1968 and Ph. D. in 1971 from Osaka University in polymer science. Since 1971 he worked at the Faculty of Engineering, Graduate School of Engineering, Osaka University, and in 1987 became professor. His work focused on the development of organic photoreceptor materials and their device applications. His current interests involve more widely the researches of organic electronics and their application to new optoelectronic and photonic devices. Prof. Yokoyama was a past president of the Imaging Society of Japan (ISJ, 2000-2001). He received IS&T's Fellowship Award in 1994, ISJ's Technical Award in 2001 and ISJ's Society Award in 2003.