

Dendritic oligothiophenes (DOTs): Monodisperse macromolecules for applications in organic solar cells

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As perfect monodisperse macromolecules with a semi-rigid hyperbranched π -conjugated architecture, dendritic oligothiophenes (DOTs) have very interesting electrooptical properties and have shown application prospects in organic and molecular electronics.^[1,2] Recently, we developed a novel family of dendritic oligothiophenes up to the 4th generation.^[2]

In this contribution, we will present the results with respect to the application of these novel dendritic oligothiophenes in bulk heterojunction photovoltaic cells. The DOT/PCBM-based devices showed high open circuit voltages of 0.9 V and a power conversion efficiency (AM1.5) of 1.68% was measured for **90T**/PCBM blended devices. Valuable structure-property relationship was also deduced based on the monodisperse and defined molecular structures of DOTs.

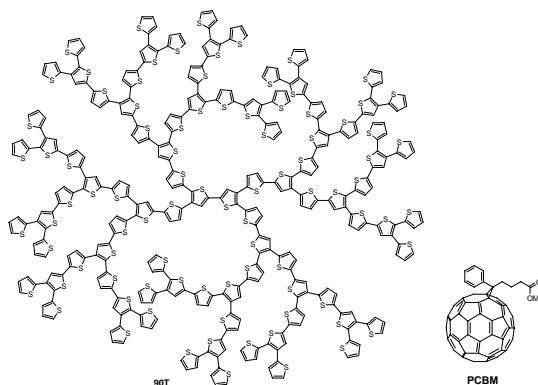


Chart 1. Chemical structures of **90T** and PCBM

[1]. C. Xia, X. Fan, J. Locklin, R. C. Advincula, A. Gies, W. Nonidez *J. Am. Chem. Soc.* **2004**, 126, 8735

[2]. C.-Q. Ma, E. Mena-Osteritz, T. Debaerdemaeker, M. M. Wienk, R. A. Janssen, P. Bäuerle *Angew. Chem. Int. Ed.* **2007**, 46, 1679.