

## Organic Photovoltaic Cell with New Oligothiophene : C60 active layer

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Organic solar cells hold promise for future low-cost electrical power generation. Organic small molecular and polymeric semiconducting materials based on conjugated thiophenes have been extensively investigated, because of their high chemical stability and high carrier mobility. In comparison with polythiophenes, oligo(thiophene)s have a great many advantages, such as excellence in well-defined conjugation lengths and structures, ease of purification and characterization, owing less deep electron traps in films.

In this study, linear  $\pi$ -conjugated molecules based on thiophene, benzothiadiazole have been synthesized using the palladium-catalyzed Suzuki coupling reaction. The oligomers were designed to have various conjugation lengths planarity and band gap. The optical and electrochemical properties of the oligomers were investigated by UV-vis absorption, photoluminescence (PL) emission spectroscopy, cyclic voltammetry(CV). The organic photovoltaic cells were fabricated using new oligomers as the active layer and their performance were explained by molecular structure and physical properties of oligomers.