

# Direct arylation polymerization of benzodithiophene with several electron acceptors for organic photovoltaic devices

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Harvesting energy directly from sunlight using photovoltaic technology is considered as being one of the most important ways to address growing global energy needs using a renewable resource. Recently, polymer solar cells (PSCs) have become very popular due to low-cost, light weight, flexibility, and solution processability.<sup>1</sup> To reduce the fabrication cost of photovoltaic devices, the development of materials as active layers for such devices are important. Conventionally,  $\pi$ -conjugated polymers for optoelectronic applications can be obtained by palladium or nickel catalyzed cross coupling techniques such as Suzuki–Miyaura, Stille and Negishi couplings that require several synthetic steps to prepare the metalated monomers and sometimes the synthesis and purification of such compounds is difficult.<sup>2</sup> Direct arylation represents an economically attractive and ecologically benign alternative to the conventional cross-coupling reactions which provides to form carbon-carbon bonds between heteroarenes and aryl halides, which do not require organometallic intermediates thereby significantly reducing both synthetic steps, metallic by-products, and cost.<sup>3</sup> Benzo[1,2-*b*:4,5-*b'*]dithiophene (BDT) comprising polymers tend to have promising photovoltaic properties. Its planar conjugated structure, regioregularity, easy modification and high hole mobility makes benzo[1,2-*b*:4,5-*b'*]dithiophene (BDT) one of the most successful electron-donor units for synthesis of semiconducting polymers. In this work, benzodithiophene was coupled with a series of different electron acceptors like isoindigo and benzazole to synthesize high molecular weight polymers with minimum structural defects.

## REFERENCES

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