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## Abstract

Energy is constantly decreasing worldwide, so there is constant demand of energy due to increase of global population. Organic electronics devices are considered as energy-efficient due to their flexibility, low weight. Donor-acceptor small molecules considered beneficial when compared to other organic materials because of their efficient electrical characteristics and possible use in various devices such as FETs, LEDs and organic photovoltaics. Donor-acceptor small molecules are incorporated in benzotriazole structure to increase its efficiency in organic electronic devices because of their low band-gap, pi conjugation, alignment of energy levels and enhancement of solubility. In this research, O-phenylenediamine used as starting substance to synthesize benzotriazole as main molecule. Then 2-octylbenzotriazole and 4,7-dibromo-2-octylbenzotriazole were synthesized by alkylation and bromination of benzotriazole respectively. Stille coupling method was used to synthesize donor-acceptor small molecules, such as 2-Octyl-4,7-di(thiophen-2-yl)1H-Benzotriazole and Benzotriazole-quinoline derivatives which have various applications as in organic electronics and OSCs. Various confirmation analysis and characterization techniques were carried out to confirm the formation of these compounds. In this research formation of these compounds were confirmed and characterized by thin layer chromatography, UV-VIS spectroscopy, GC-MS and PL Spectroscopy.