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## Efficient Ternary Polymer Solar Cells by Doping Fullerene Derivatives

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### Abstract:

Here, indene-C<sub>60</sub> bisadduct (ICBA) was incorporated into poly[4,8-bis(5-(2-ethylhexyl)thiophen-2-yl)benzo[1,2-b:4,5-b']dithiophene-co-3-fluorothieno[3,4-b]thiophene-2-carboxylate]:[6,6]-phenyl-C<sub>71</sub>-butyric acid-methyl-ester (PTB7-Th:PC<sub>71</sub>BM) as active layer to fabricate the ternary polymer solar cells (PSCs). The introduction of cascade acceptor ICBA was benefit for energy level alignment and improving interface between polymer donor and fullerene derivatives acceptor while inheriting the major benefit of PTB7-Th and PC<sub>71</sub>BM, broad and strong absorption and high electron mobility. In the ternary PSCs, the weight ratio of PTB7-Th:fullerene derivatives acceptor was 1:1.5, of which the weight percentage of ICBA in this fullerene derivatives acceptors varied from 0 wt% to 100 wt%. Introducing around 10 wt% ICBA as fullerene derivatives acceptor, the best power

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