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**A Star-Shaped Photovoltaic Organic Molecule Based on
1,3-Diethyl-2-thiobarbituric Acid Reaches a Power Conversion Efficiency of
3.07%**

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Abstract

A star-shaped organic molecule (TPA-bHTV-DT) with triphenylamine (TPA), 4,4'-dihexyl-2,2'-bithiophenevinylene (bHTV) and 1,3-diethyl-2-thiobarbituric acid has been synthesized. TPA-bHTV-DT film shows a broad absorption from 400 nm to 700 nm in the visible range. The solution-processable organic solar cells based on a blend of TPA-bHTV-DT and [6,6]-phenyl-C-71-butyric acid methyl ester (1:3, w/w) exhibited a power conversion efficiency of 3.07%, with a short-circuit current density of 7.87 mA. cm⁻², an open-circuit voltage of 0.92 V and an fill factor of 42.4%.

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