T-Shaped Push–Pull Chromophores: First Modification of the Indan-1,3-dione-Fused Benzene Ring by Cross-Coupling Reactions

Synthesis 2013, 45, 3044–3051.

Push–Pull Chromophores from Indan-1,3-dione

Modification of indan-1,3-dione:

1. ethyl acetoacetate
   Et$_3$N, Ac$_2$O, 25 °C
2. HCl-H$_2$O, 80 °C

T-Shaped chromophore synthesis:

Pd-catalyzed cross-coupling

**Significance:** The synthesis of T-shaped push–pull chromophores based on indan-1,3-dione as an electron acceptor is presented. The two donor moieties that comprise the T-shaped architecture are installed via the Knoevenagel condensation of 4,7-diiodoindan-1,3-dione with an aryl aldehyde, followed by palladium-catalyzed cross-coupling of the iodides with $N,N$-dimethylaniline or thiophene-containing substituents.

**Comment:** The optical and electronic properties of the synthesized T-shaped chromophores are extensively studied by UV/Vis absorption spectroscopy and calculations. Their non-linear optical properties are also examined through theoretical calculations.