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SOLUBLE STAR-SHAPED 4(HP3T)-BENZENE BASED ORGANIC THIN FILM TRANSISTORS

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p-Conjugated organic materials have been studied for applications to organic light-emitting diodes, organic thin film transistors (OTFTs), and organic photovoltaic devices. We fabricated OTFTs by using a soluble p-conjugated star-shape molecule such as 4(HP3T)-benzene, and investigated current-voltage characteristics with low intensity of light. The 4(HP3T)-benzene was dissolved in monochlorobenzene and spin coated onto the photolithographic pattern to form active layer. The highly *p*-type doped Si and thermally grown SiO₂ layer were used for a gate electrode and dielectric layer, respectively. We used light source of a 200 W Mercury-Xenon lamp, and the monochromatic light was incident on the top OTFT devices. All measurement were performed at room temperature. We observed the variation of the source-drain current with varying the energy of incident light, and estimated photoinduced responsivity using the ratio of photocurrent to dark current (I_{ph}/I_{dark}) [1].

References

1. N. M. Johnson and A. Chiang, *Appl. Phys. Lett.* **45**, 1102 (1984).