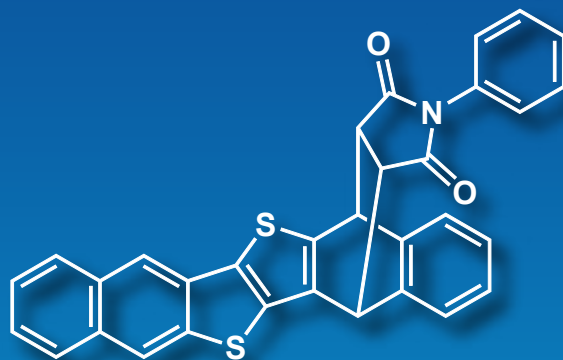


Organic Transistor Reagent Soluble DNTT Precursor



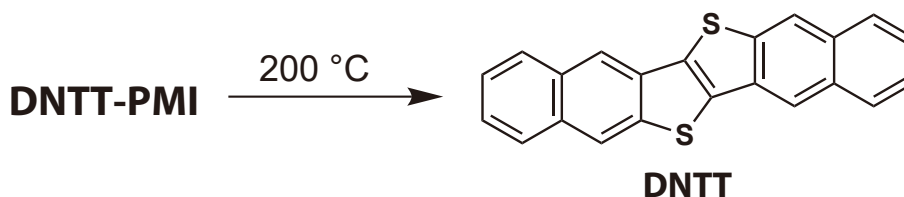
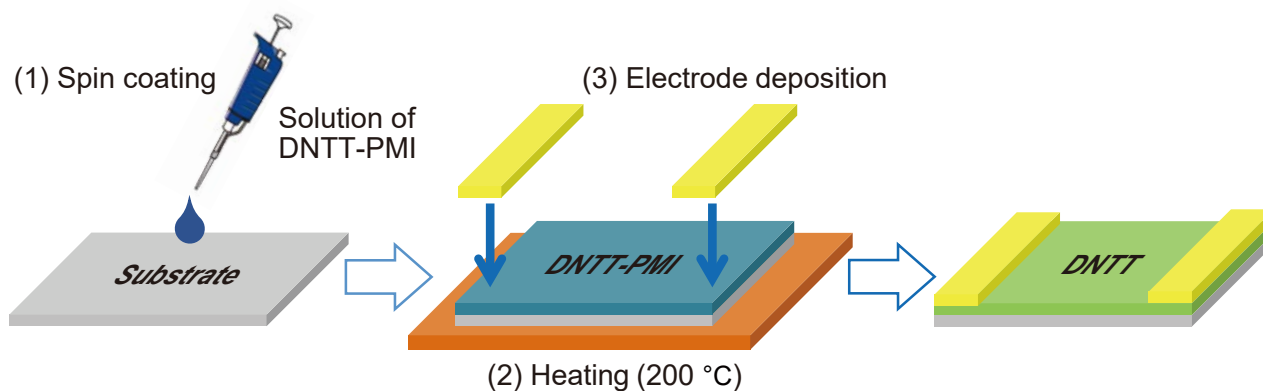
exo-DNTT-PMI
50mg
[D5154]

Advantages

- Solution-processable DNTT precursor
- Thermally convertible to DNTT in thin-film
- Applicable to organic transistor and memory devices

Application

Solution processed OFETs using DNTT-PMI



References (a) *J. Am. Chem. Soc.* **2007**, 129, 2224. (b) *Adv. Mater.* **2015**, 27, 727. (c) *Adv. Mater.* **2015**, 27, 6606. (d) *Organic Electronics* **2013**, 14, 1211. (e) *Appl. Phys. Express* **2015**, 8, 101601. (f) Y. Ikeda, T. Shiro, K. Takimiya, Patent JP5269825.

Organic Transistor Reagent : Soluble DNTT Precursor

Thin-film and OFET properties

Figure 1 shows polarized optical microscopy (POM) image of DNTT thin film prepared from DNTT-PMI. Image clearly shows polycrystalline film morphology. As shown in Figure 2, fabricated devices show typical p-type characteristics.

Maximum carrier mobility 0.86 cm²/Vs was observed when channel length was 200 μm. Carrier mobility was greatly improved to 2.33 cm²/Vs when the channel length was shortened to 20 μm.

This high mobility can be assumed to be as following: the source and drain channels were completely filled in single grain, so the carrier transportation barrier caused by grain boundaries reduced.

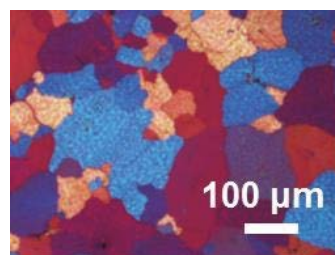


Figure 1. POM image of DNTT thin film

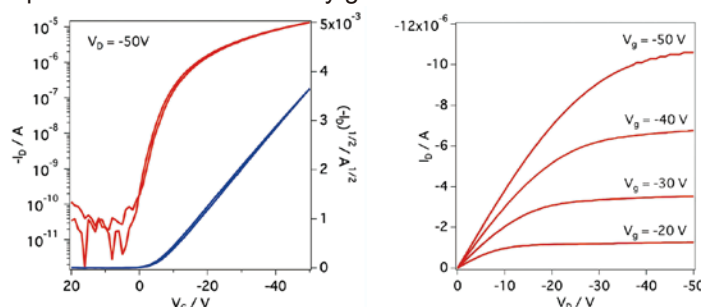


Figure 2. Transfer (left) and output (right) curves of OFET device prepared from DNTT-PMI

Device	Anneal. Temp. (°C)	Channel Length (μm)	Mobility (cm ² /Vs)	on/off	V _{th} (V)
1	200	200	0.86	4.8 × 10 ⁶	-5.5
2	210	200	0.85	4.6 × 10 ⁵	-0.9
3	210	20	2.33	1.1 × 10 ⁷	-3.1

Table 1. Summary of OFET properties of DNTT prepared from DNTT-PMI

Other notices of DNTT-PMI

Solubility: 0.2wt% in CHCl₃ (*exo*-DNTT-PMI)

Storage Condition: Store in the dark because the color of *exo*-DNTT-PMI gradually turns to red under light irradiation

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E-mail : Sales-DE@TCIchemicals.com

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Tel : +44 (0)1865 78 45 60
E-mail : Sales-UK@TCIchemicals.com

梯希爱(上海)化成工业发展有限公司

Tel : 800-988-0390 / 021-67121386
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