

Supplementary Information

for

Highly Crystalline, Low Band-gap Semiconducting Polymers Based on Phenanthrodithiophene-benzothiadiazole for Solar Cells and Transistors

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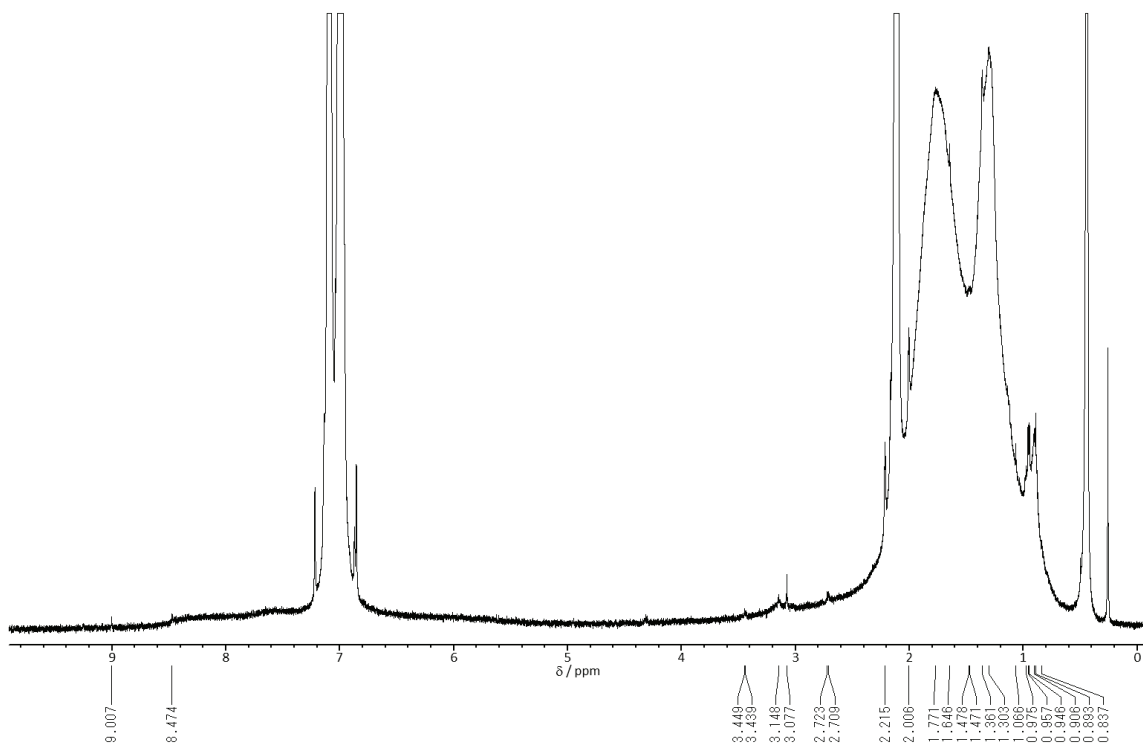
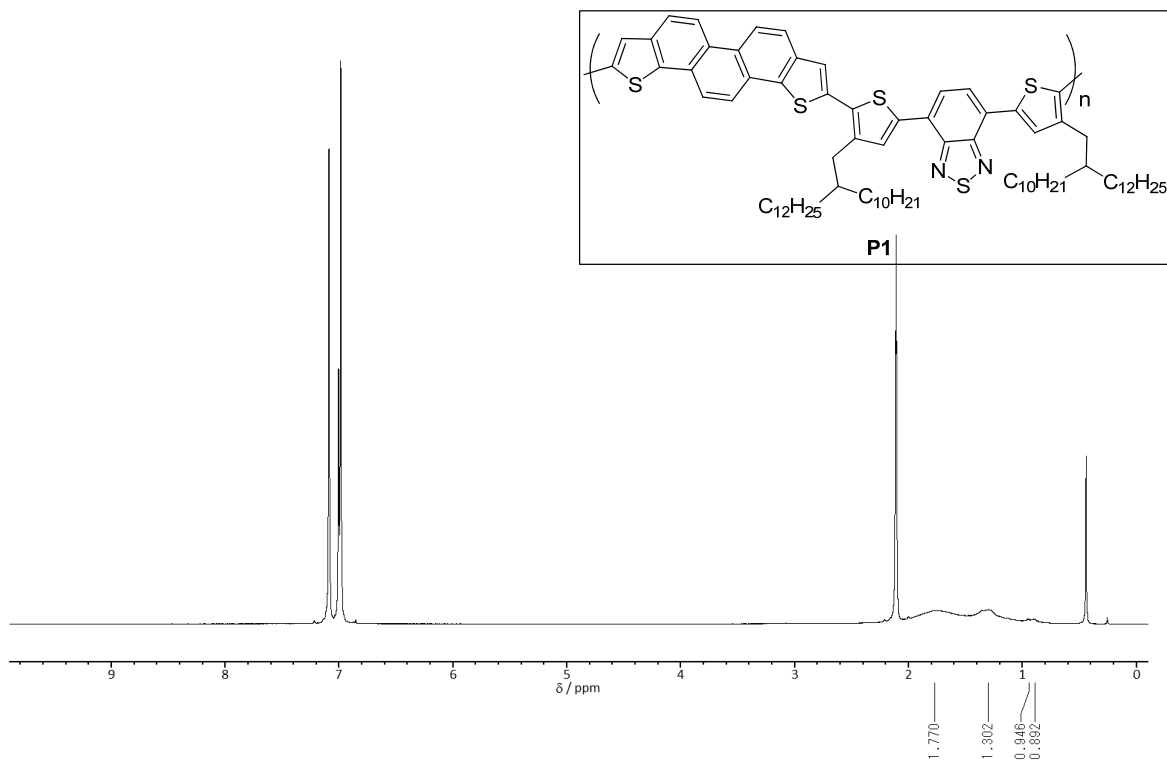
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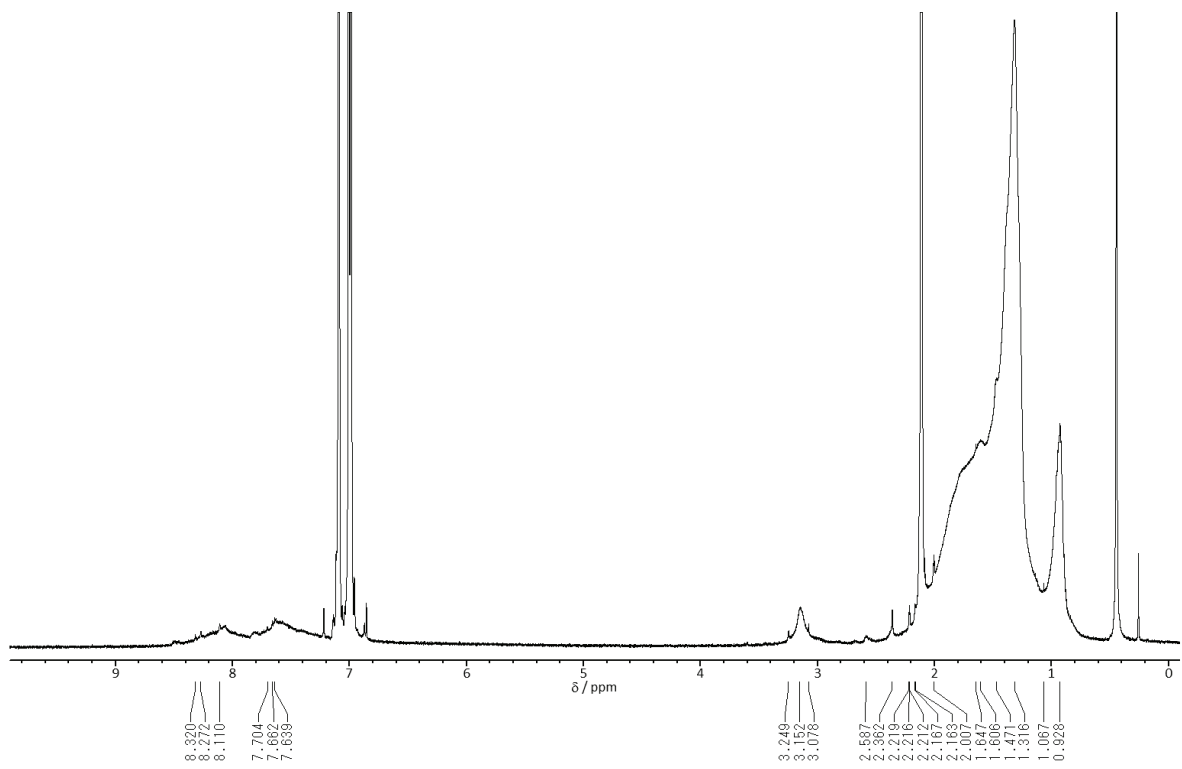
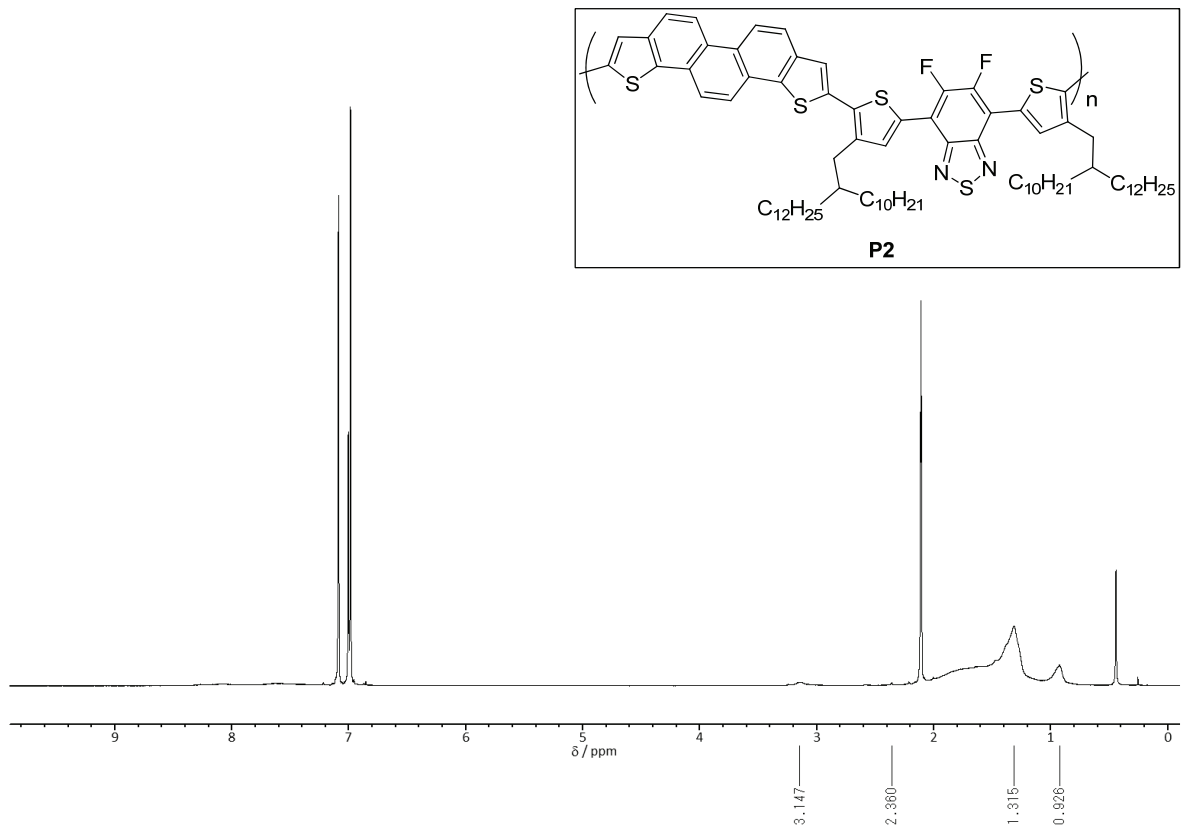
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1. Copies of ^1H NMR Charts for the New Polymers



The ^1H NMR spectrum of P1 (600 MHz in toluene- d_8 at 80 °C).



The ^1H NMR spectrum of **P2** (600 MHz in toluene- d_8 at 80 °C).

2. TGA Curves of P1 and P2

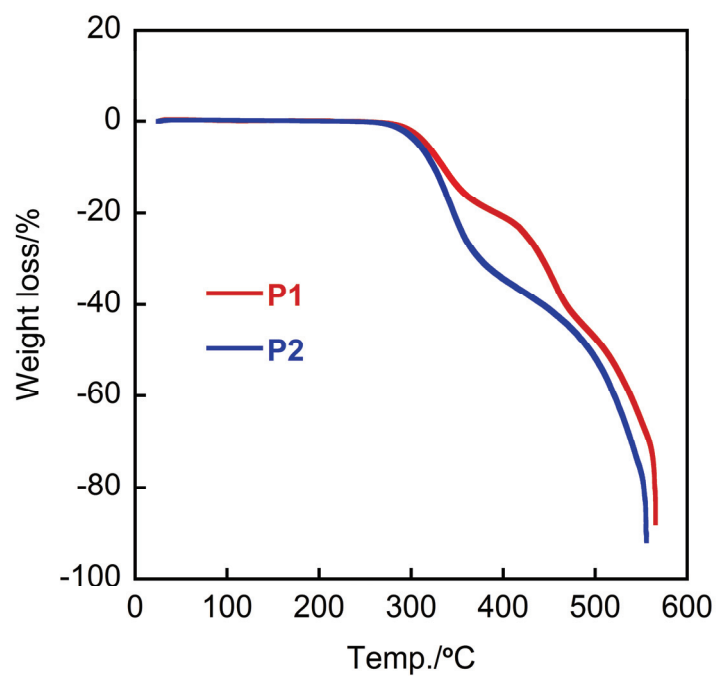


Fig. S1. TGA curves of **P1** and **P2** at a scan rate of 10 °C/min.

3. DSC Thermograms of P1 and P2

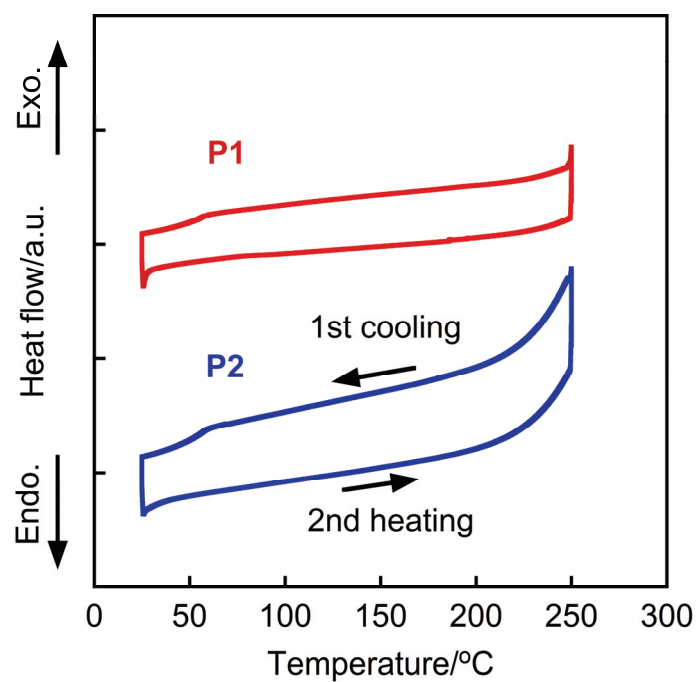


Fig. S2. DSC thermograms of **P1** and **P2** at a scan rate of 10 °C/min.

3. Electrochemical Properties of P1 and P2

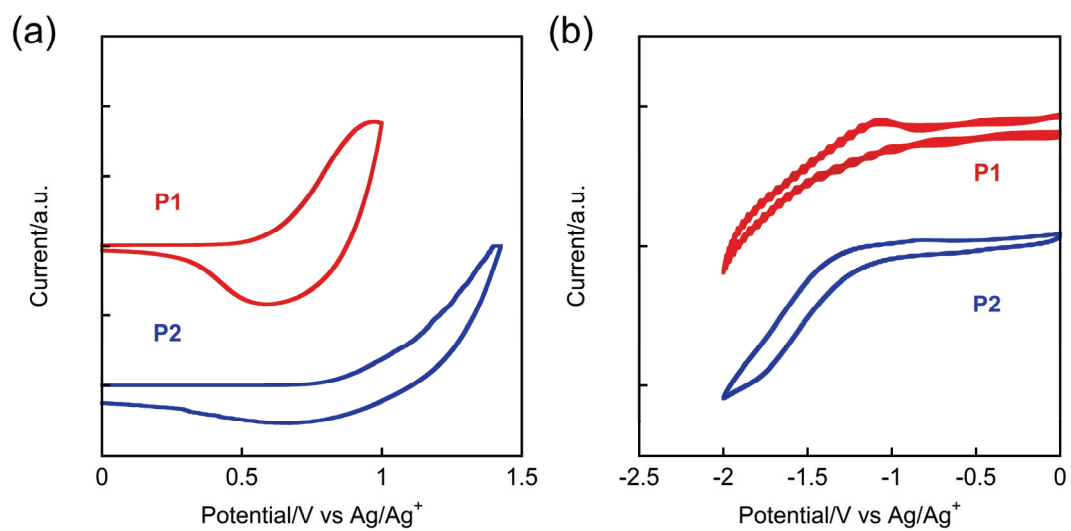


Fig. S3. Cyclic voltammograms of **P1** and **P2** in thin films; (a) oxidation and (b) reduction.

4. AFM Images of P1 and P2 on ODTS-treated n^+ -Si/SiO₂ Substrate

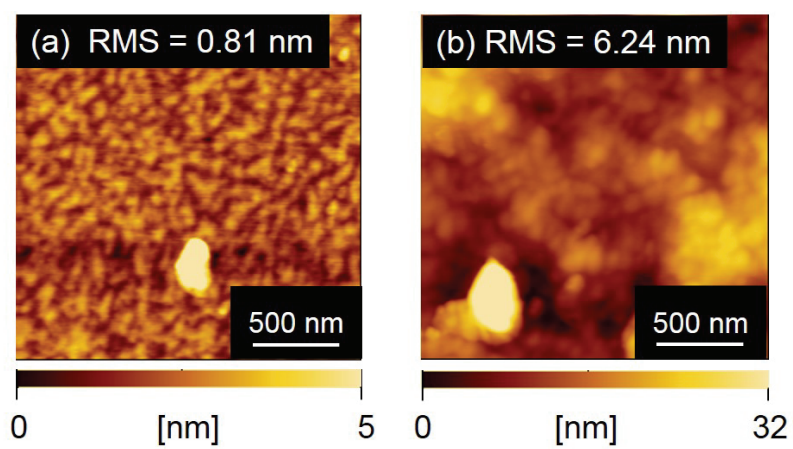


Fig. S4. AFM images ($2 \times 2 \mu\text{m}$) of polymer films on ODTS-treated n^+ -Si/SiO₂ Substrate; (a) **P1** annealed at 250 °C and (b) **P2** annealed at 300 °C.

5. Output Curves of P1 or P2-based OFET devices

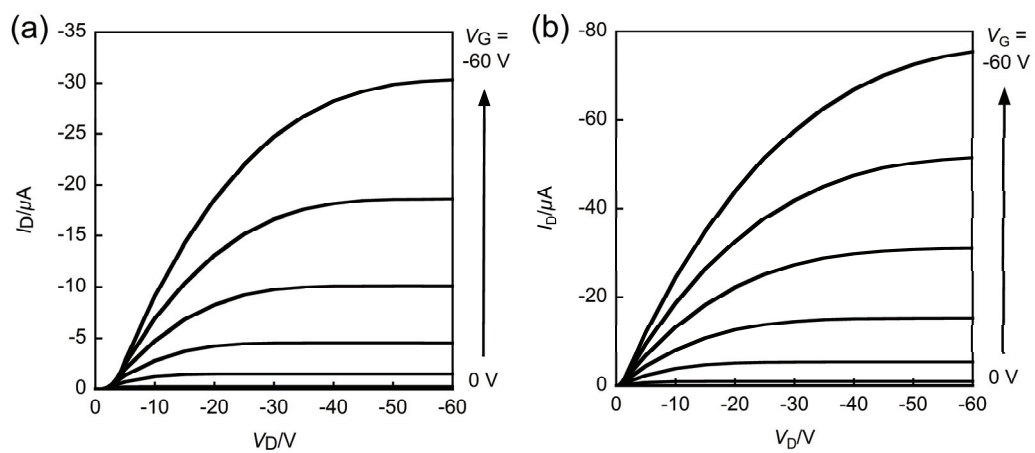


Fig. S5. Output curves of OFET devices; (a) **P1** annealed at 250 °C and (b) **P2** annealed at 300 °C.