# Supporting Information

**A supramolecular approach to enhance the optoelectronic properties of P3HT-b-PEG block copolymer for organic field effect transistor**

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**Results:**

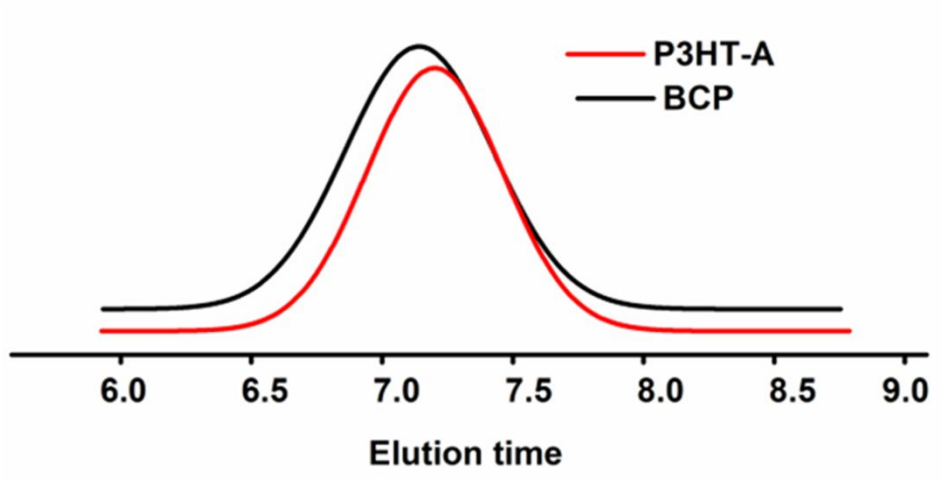


**Figure S1**

**Fig. S1.** GPC traces of poly-3-hexyl thiophene (P3HT-A) and block copolymer (BCP).

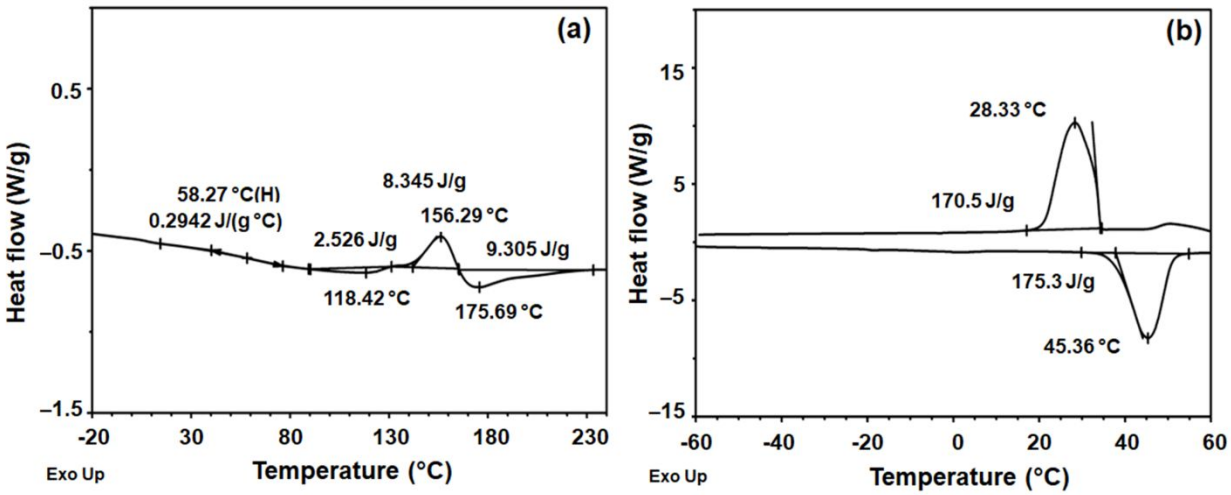


**Figure S2**

**Fig. S2.** Differential scanning calorimetric of powder (**a**) Perylenediimide butyric acid (PDIBA) and (**b**) Polyethylene glycol

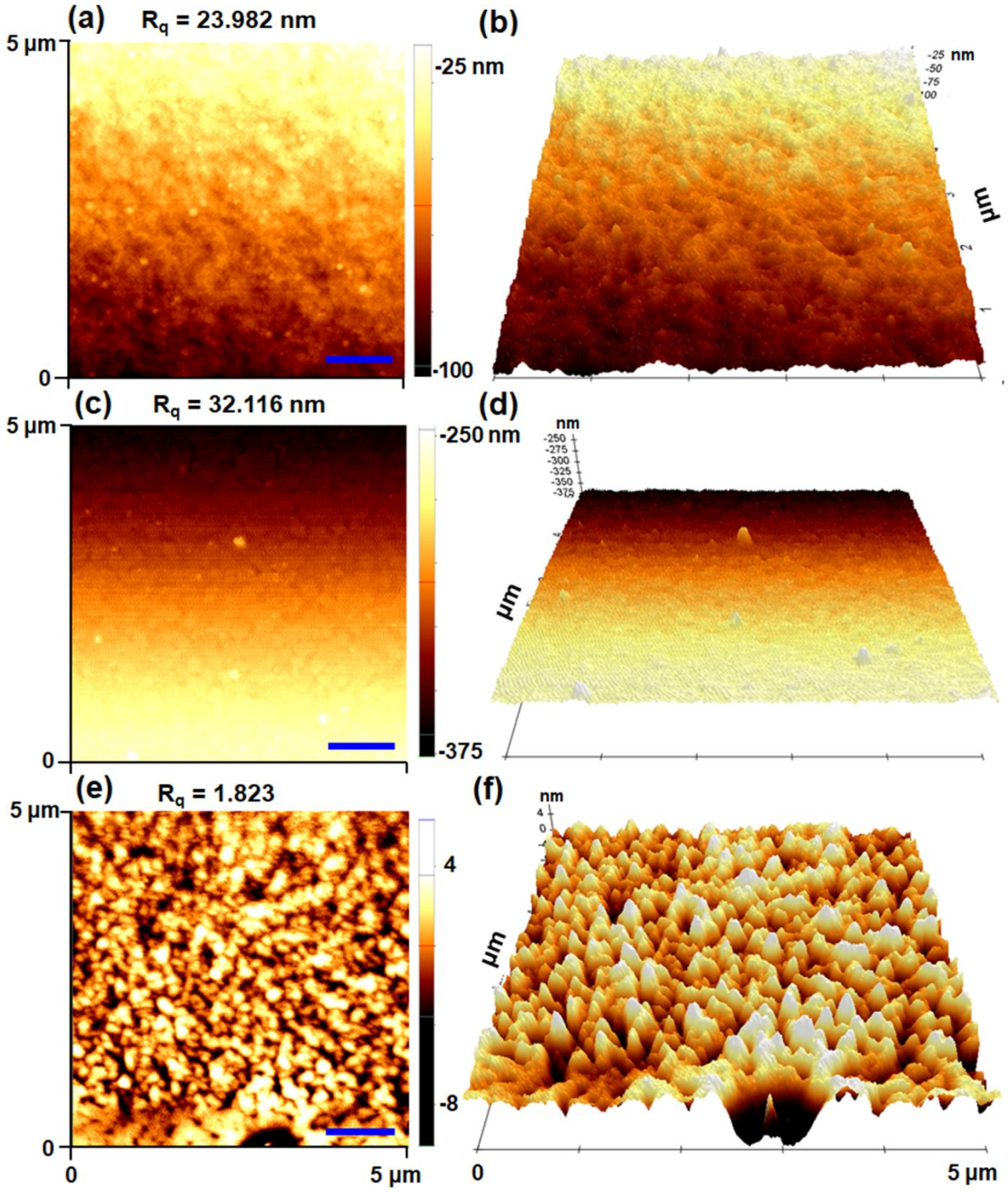


**Figure S3**

**Fig. S3.** Atomic force micrographs (5×5 micrometer) of thin films as cast (**a, b**) poly(3-hexylthiophene)-alkyne (P3HT-A), (**c, d**) block copolymers (BCP), and (**e, f**) supramolecular block copolymer (SBCP) prepared by drop casting from toluene (Bar = 1000 nm).

**Table S1.** Thermal properties of the synthesized poly(3-hexylthiophene)-alkyne (P3HT-A), block copolymers (BCP), and supramolecular block copolymer (SBCP) films prepared by 10 mg $mL^{-1}$ toluene and powder of carboxyl-functionalized perylenediimide (PDIBA) and polyethylene glycol (PEG).

| Sample | Tm (°C) | Tc (°C) | Tg (°C) | ΔHm (J/g) |
|---|---|---|---|---|
| **P3HT-A** | 230 | 162 | 20 | 22.6 |
| **PEG** | 54 | - | - | 193.6 |
| **PDIBA** | 199 | - | 63 | 10.7 |
| **SBCP** | 234 | 188 | 106 | 25.28 |
| **BCP** | 221 | 167 | - | 7.82 |