Electronic Supplementary Material (ESI) for RSC Advances.

Supporting Information

Exceptionally low thermal conductivity of poly(3-hexylthiophene) single nanowires

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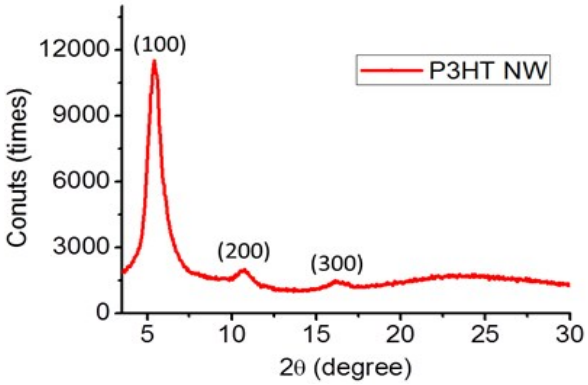

Figure S1 XRD spectrum of the P3HT NWs

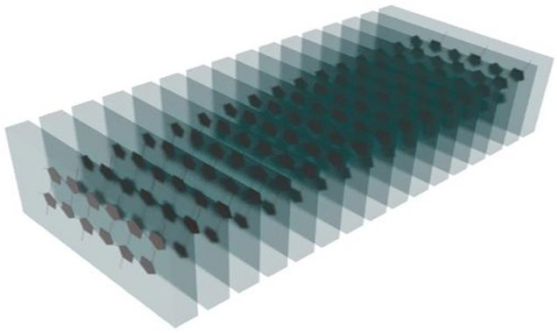

Figure S2 Schematic illustration of the local structural information from a single P3HT NW which shows a Lamellar-type bilayer of P3HT with hexylthiophene rings standing vertically (a-axis) and pi-pi stacking orientated horizontally (b-axis).

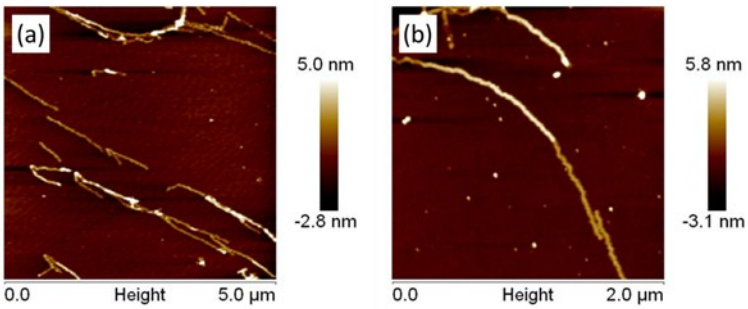

Figure S3 AFM images of properly dispersed P3HT NWs.

Preparation of P3HT NWs of different diameters at different temperatures and solvents: The following results show that the diameters of the nanowires are dependent on the temperatures. When the temperature is changed to 35 °C, the average diameter of the nanowires is increased to ~32 nm.

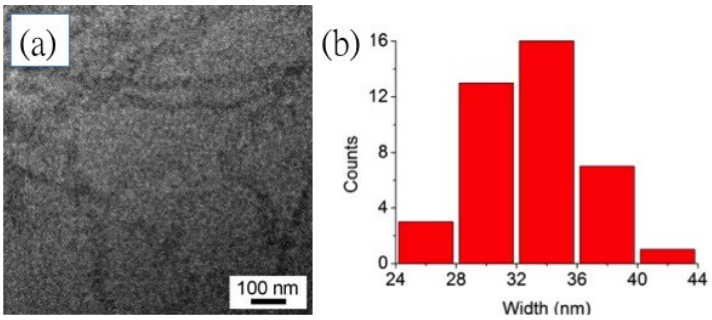

Figure S4 TEM image and size distribution of P3HT nanowires prepared at 35 °C using p-xylene as a marginal solvent

In addition to *p*-xylene, we have tried chloroform as the solvent for the formation of the P3HT nanowires. Different from *p*-xylene, no P3HT nanowire is formed when the P3HT solution in chloroform is cooled to room temperature. Some P3HT nanowires, however, can be obtained when the P3HT solution in chloroform is cooled to 0 °C, as shown in the Figure S5. Therefore, the formation of the P3HT nanowires is proved to be affected by the solvent qualities of the polymer solution.

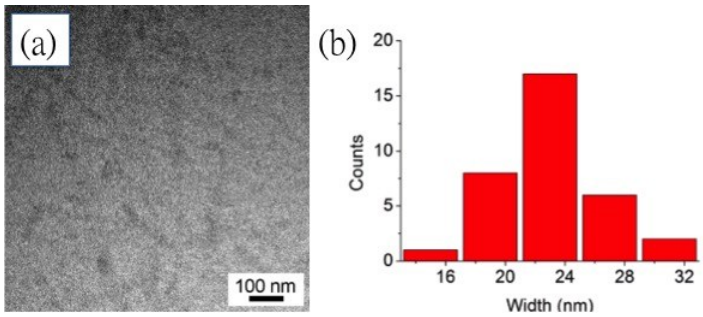

Figure S5 TEM image and size distribution of P3HT nanowires prepared at 0 °C using chloroform as a marginal solvent.