

# Supplementary Information

## **Diameter and Thermal Treatment Dependent Structure and Optical Property of Poly(3-hexylthiophene) Nanotubes**

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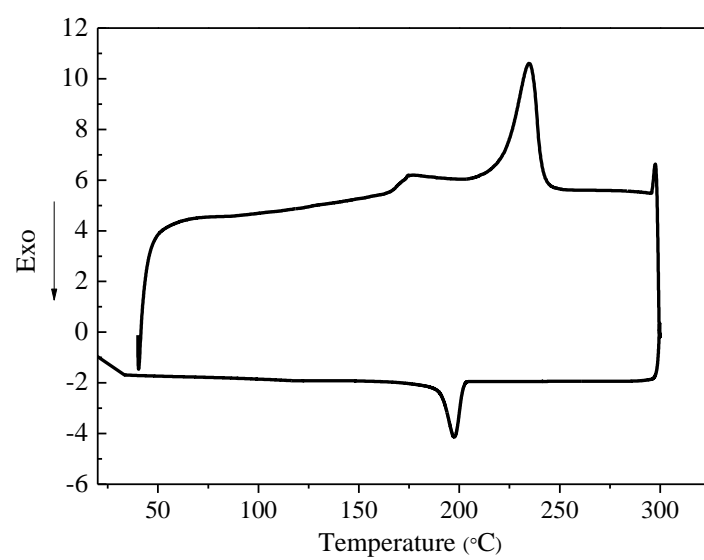
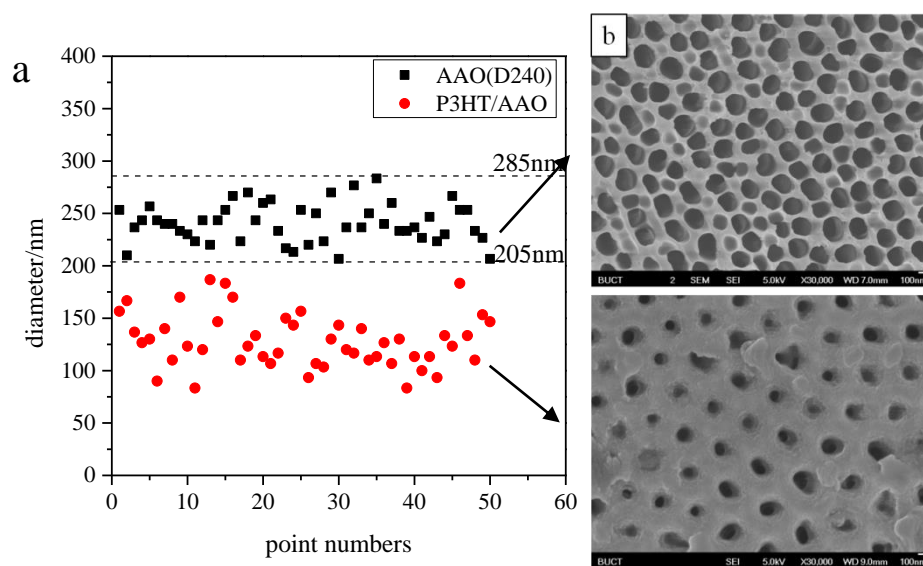
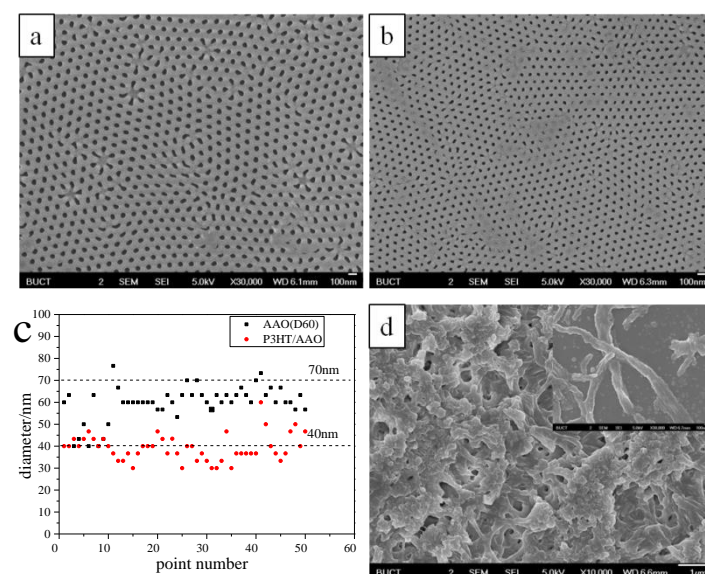


Figure S1 DSC heating and cooling curves for bulk P3HT.

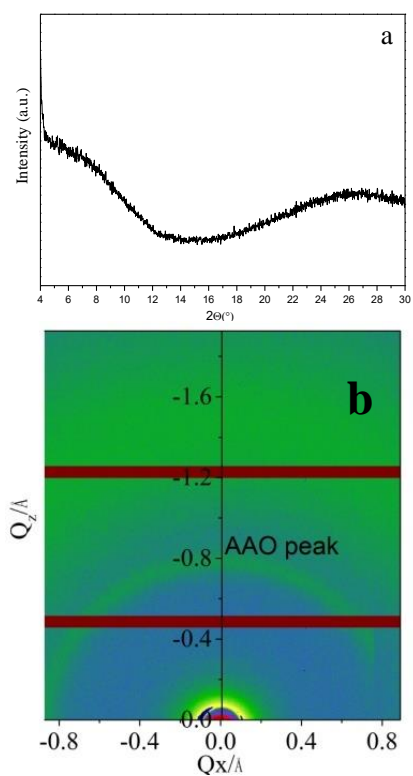


**Figure S2** (a) The statistic of the diameter distribution of AAO mold and P3HT/AAO and (b) the SEM of them respectively.

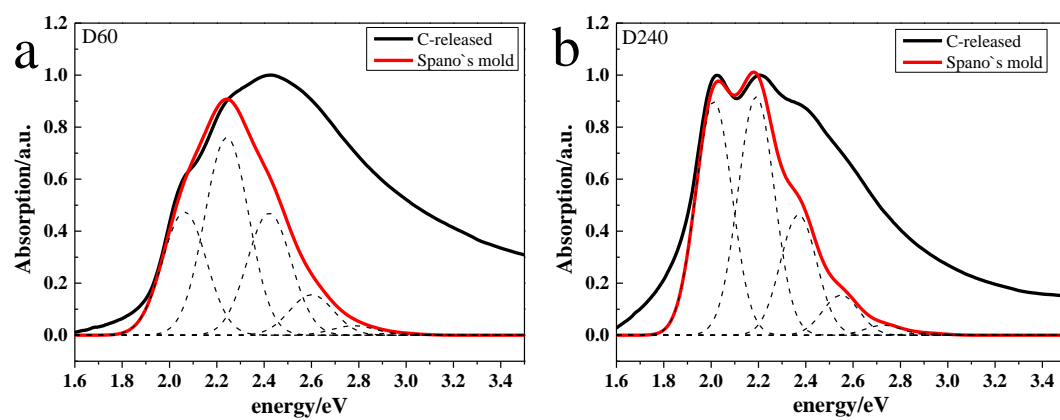
The average pores diameter of empty AAO mold is about 240 nm and the average pores diameter of P3HT/AAO is about 130 nm. So the mean thickness of the P3HT nanotubes wall is 55 nm.



**Figure S3** SEM of the (a) empty AAO mold with diameter around 60 nm, (b) AAO mold infiltrated of P3HT nanotubes, (c) a film with P3HT nanotubes while etching AAO mold and (d) after ultrasonic treatment, the inset is the condensed nanotube of P3HT. The average pores diameter of empty AAO mold is about 60 nm and the average pores diameter of P3HT/AAO is about 40 nm. So the mean thickness of the P3HT nanotubes wall is 10 nm.



**Figure S4** The WAXD pattern of AAO mold (both D240 and D60) with Q parallel (a) and perpendicular (b) to the long axis of pores.



**Figure S5** The normalized UV-vis absorption spectra and fitting results of C-released samples for (a) D60 and (b) D240 by Spano's mold.