

Supporting information for:

Investigation of Transport Properties of Coronene·TCNQ Cocrystal Microrods with Coronene Microrods and TCNQ Microsheets

Hao-Di Wu,^{ab} Feng-Xia Wang,^a Meng Zhang,^c Ge-Bo Pan^{*a}

^a *Suzhou Institute of Nano-tech and Nano-bionics, Chinese Academy of Sciences, 215123 Suzhou, P. R. China*

^b *Also at University of Chinese Academy of Sciences*

^c *Suzhou Xingshuo NanoTech Co.,Ltd.*

Experimental Section

Materials

Coronene and tetracyanoquinodimethane (TCNQ) were purchased from Sigma-Aldrich Company and used as received.

Device Fabrication

Source-drain gold electrodes with the line spacing of 20 μm were fabricated by photolithography and electron beam deposition of Au on Si substrate with 300 nm thick SiO_2 . A drop of solution is directly deposited on the prepatterned substrate. Randomly, some of the microrods (or microsheets) could be attached to the Au electrodes, which bridge the source and drain electrodes. The devices were then annealed at 393 K in vacuum oven for 1h to remove the solvent thoroughly. All the measurements were carried out with a Keithley 4200 SCS and standard probe station at ambient conditions in the shielded box at room temperature.

Measurements

SEM images were taken with a Hitachi s-4800 scanning electron microscope. XRD patterns were performed using a D8-discover Bruker X-ray diffractometer with Cu K α radiation ($\lambda = 1.5418 \text{ \AA}$). Raman spectra were obtained by LabRAM HR high resolution Raman microscope with a focused laser (632 nm).

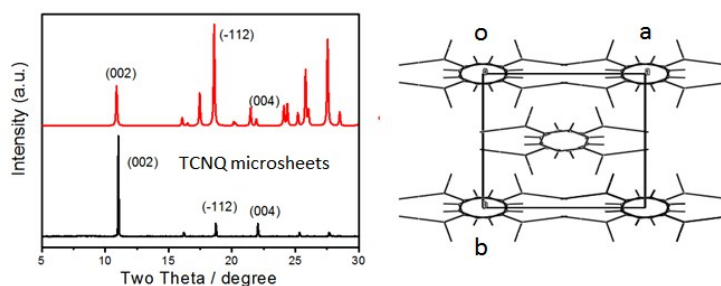


Fig. S1 XRD patterns of TCNQ microsheets along with the powder diffraction of TCNQ simulated from Cif (left) and crystal structure of TCNQ viewed along the [001] direction (right). The (001) face is parallel with the substrate.

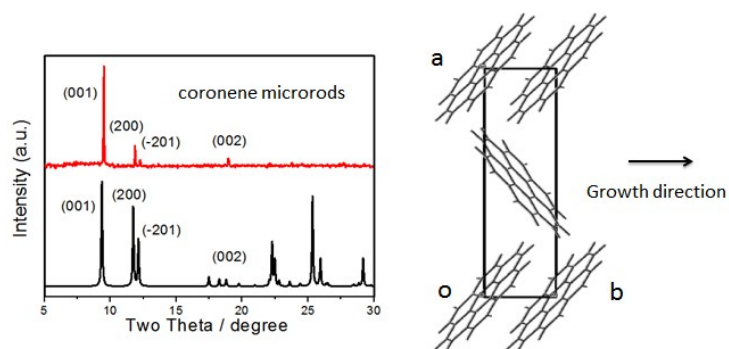


Fig. S2 XRD patterns of coronene microrods along with the powder diffraction of coronene simulated from Cif (left) and crystal structure of coronene viewed along the [001] direction (right).

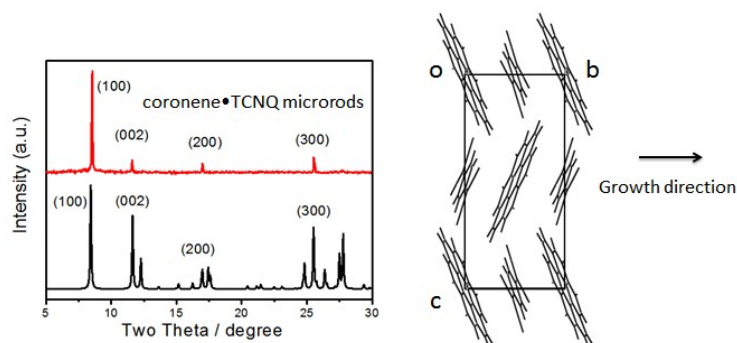


Fig. S3 XRD patterns of coronene•TCNQ microrods along with the powder diffraction of coronene•TCNQ simulated from Cif (left) and crystal structure of coronene•TCNQ viewed along the [100] direction (right).

Mobility ($\text{cm}^2\text{V}^{-1}\text{S}^{-1}$)	1-5 (10^{-6})	5-20 (10^{-6})	2-10 (10^{-5})	1-10 (10^{-3})	0.01-0.05
Number (TCNQ)	2	23	5		
Number (Coronene-TCNQ)				11	19

Table S1 Distribution of the mobility of TCNQ and Coronene-TCNQ tested from thirty samples.