Supporting information for:

Preparation of nano/microstructures of CuOEP-TCNQ cocrystals with controlled stacking and their photoresponse properties

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Experimental Section

Materials

Tetracyanoquinodimethane (TCNQ) and copper octaethylporphyrin (CuOEP) were purchased from Sigma-Aldrich Company and used as received.

Device Fabrication

Source-drain gold electrodes were fabricated by photolithography and electron beam deposition of Au on Si substrate with 300 nm thick SiO_2. Both of the DDA nanoribbons and DA microrods were firstly dispersed in the poor solvent of n-hexane and then directly deposited onto the pre-patterned substrates. The devices were then annealed at 393 K in vacuum oven for 2 h 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 and at room temperature.

Measurements

SEM images were taken with a Hitachi s-4800 scanning electron microscope. XRD spectra were performed using a D8-discover Bruker X-ray diffractometer with Cu Kα radiation (λ = 1.5418 Å). UV-vis-NIR spectra were recorded by a lambda750 spectrophotometer with a 60 mm integrating sphere for the measurement of solid

samples deposited on quartz in the form of film. Raman spectra were obtained by LabRAM HR high resolution Raman microscope with a focused laser (632 nm).

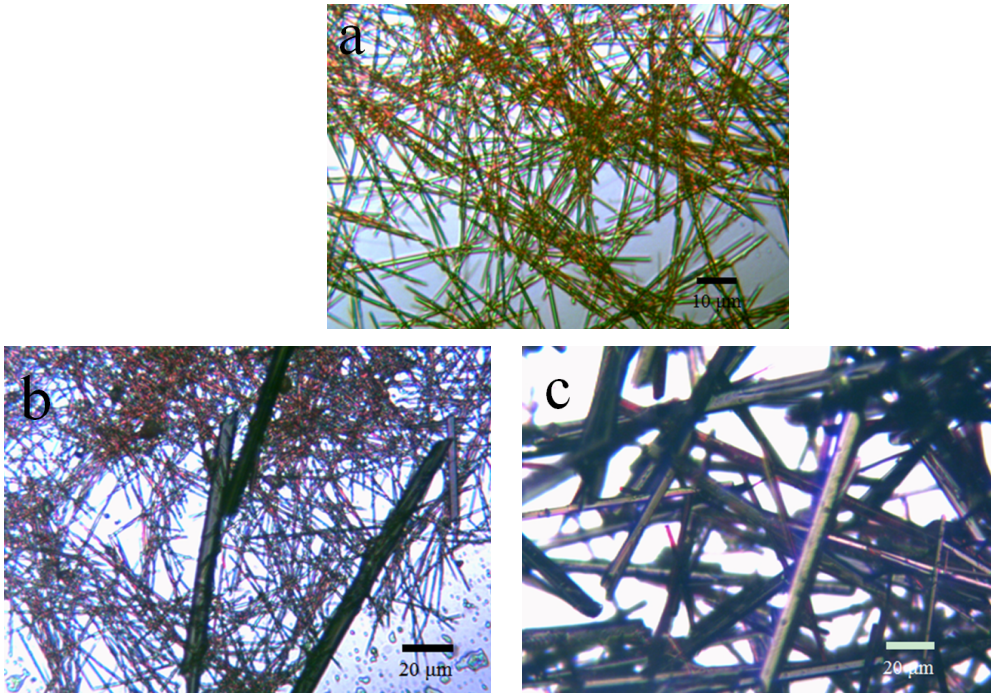

Figure. S1 Optical microscopy images of (a) DDA nanoribbons, (b) a blend of DDA nanoribbons and DA microrods, and (c) DA microrods.

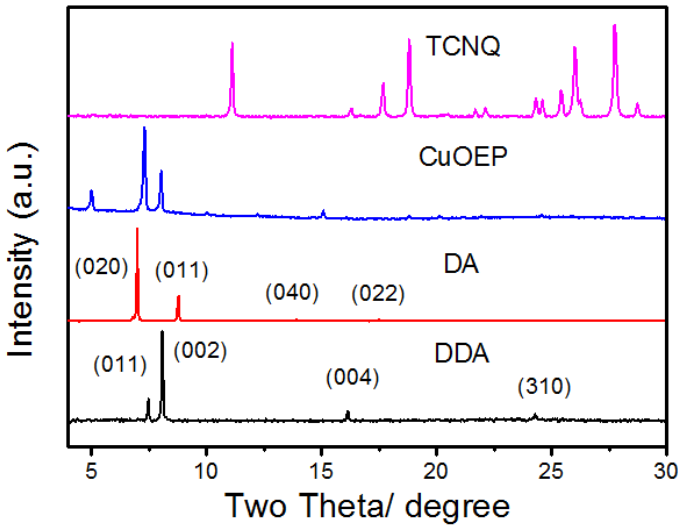

Figure. S2 XRD patterns of DDA nanoribbons (black line) and DA microrods (red line) along with the starting powders of CuOEP and TCNQ.

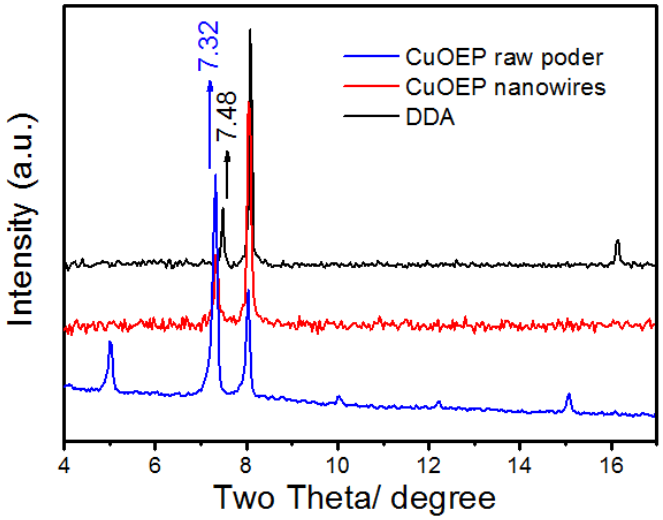

Figure. S3 Large magnification XRD patterns of DDA nanoribbons along with the starting CuOEP powder and CuOEP nanowires prepared by a solution method. Although the peak positions of DDA nanoribbons and CuOEP nanowires are close, they are indeed different. The XRD peaks of the prepared DDA nanoribbons can not be well indexed to the crystal phase of CuOEP, but well indexed to the reported crystal structure of cocrystal TCNQ • 2CuOEP (DDA).

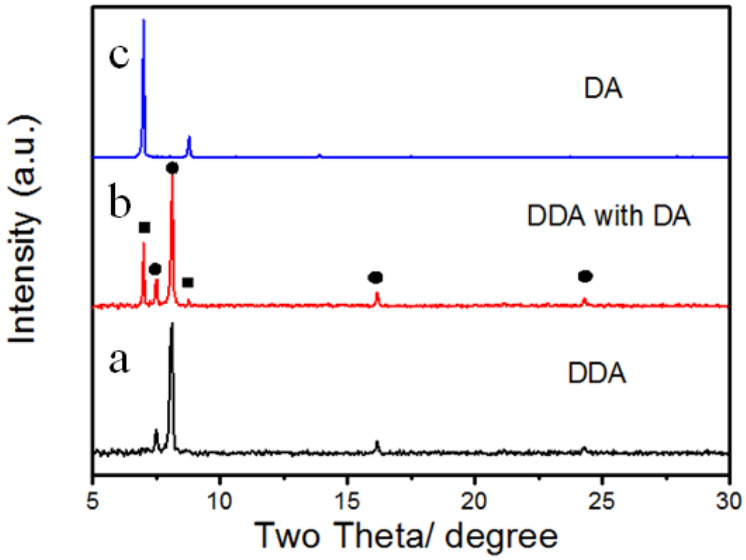

Figure. S4 XRD patterns of the products prepared by increasing the concentration of TCNQ: (a) 0.5 mM, (b) 1 mM, and (c) 2 mM. The peaks indicated by circles and squares correspond to the DDA phase and DA phase, respectively.