Electronic Supplementary Material (ESI) for Nanoscale.

Multifunctional Molecular Charge-Transfer Thin Films

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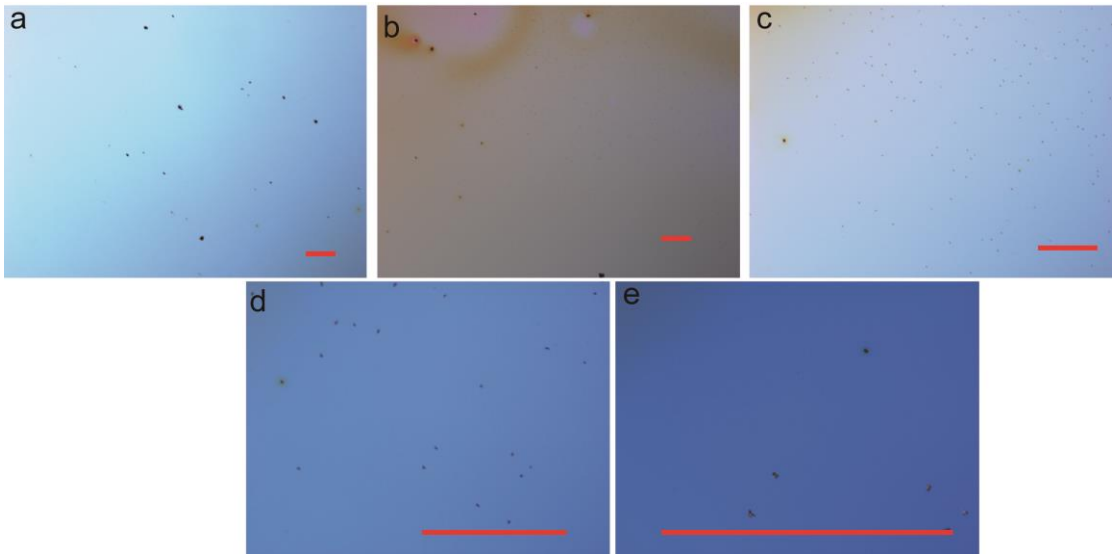

Figure S1 Optical microscopy (OM) images of BCCT film evaporated at 180 ^{o}C (a) and 200 ^{o}C (b-e) for 4 h.

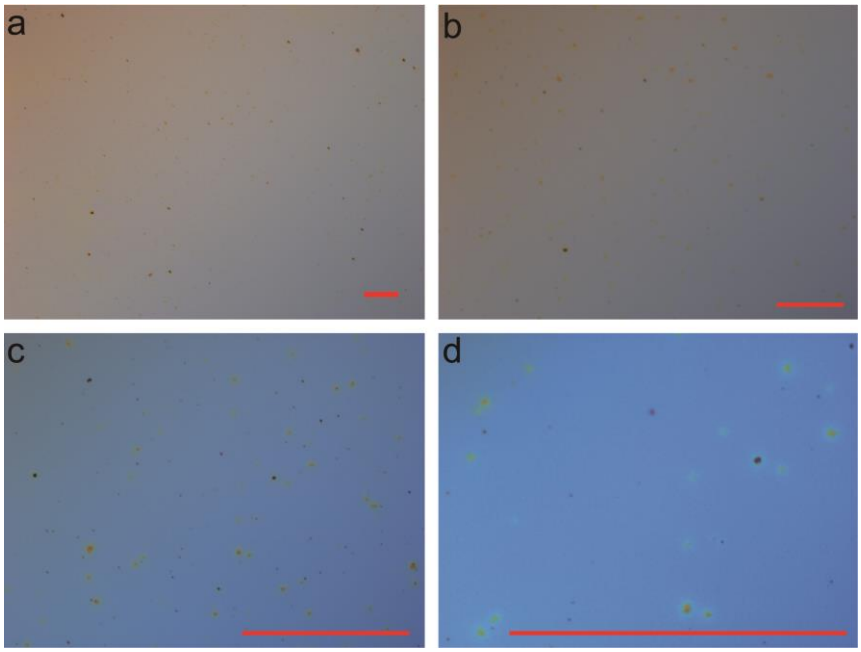

Figure S2 OM images of BCCT film evaporated at 215 ^{o}C for 4 h.

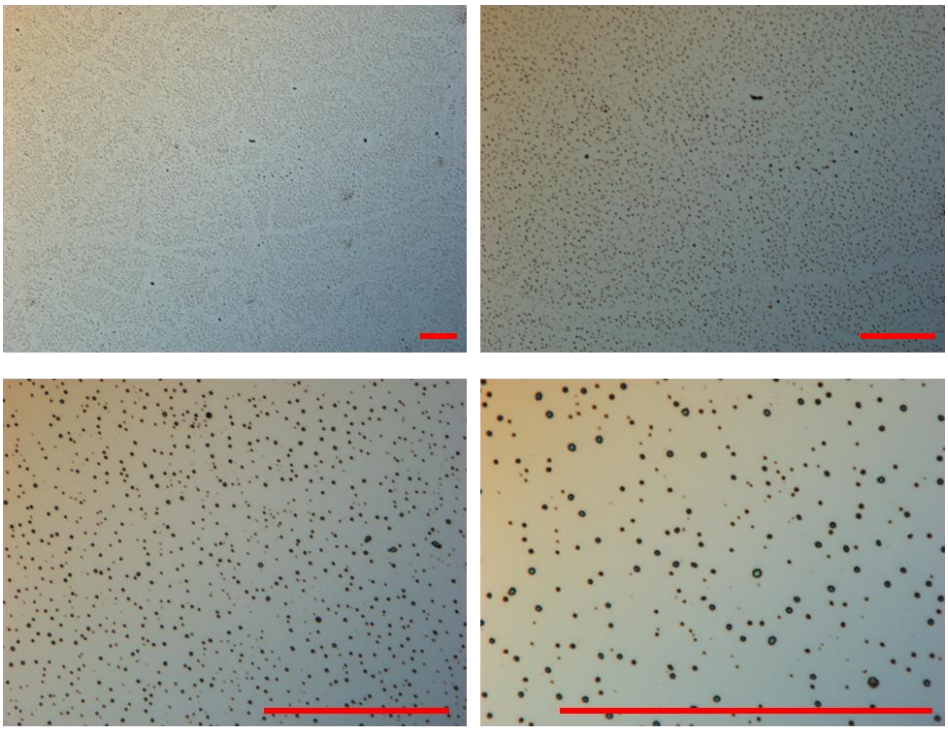

Figure S3 OM images of BCCT film evaporated at 230 ^{o}C for 1.5 h.

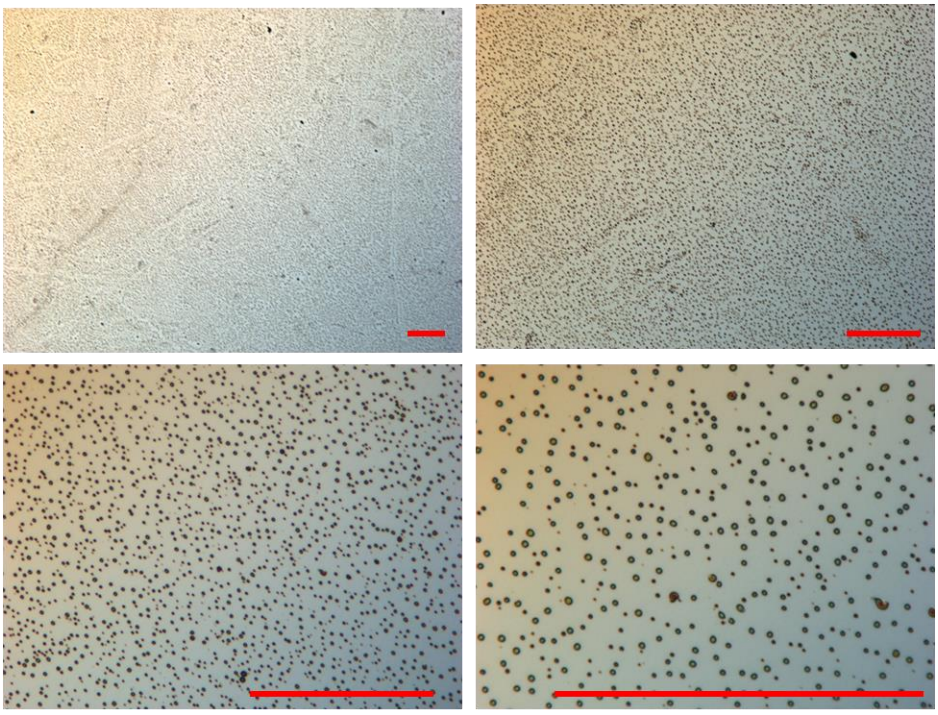

Figure S4 OM images of BCCT film evaporated at 265 ^{o}C for 1.5 h.

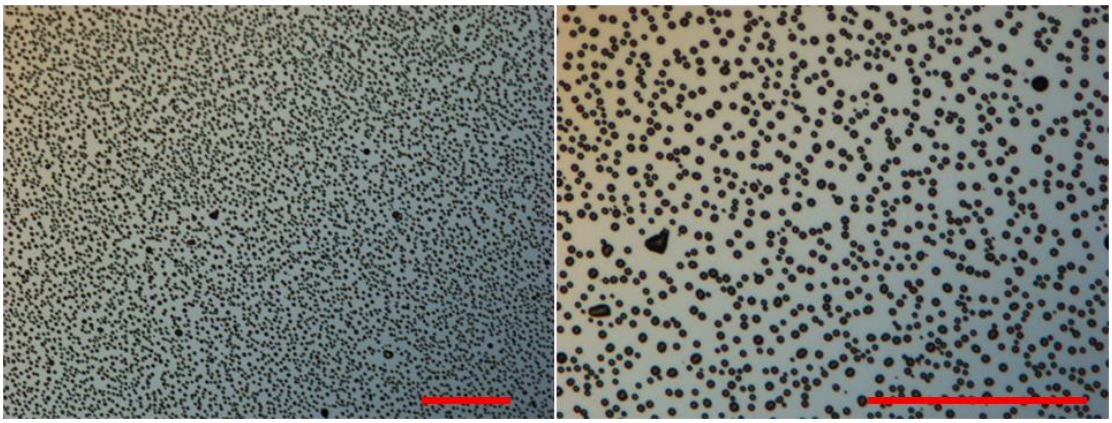

Figure S5 OM images of BCCT film evaporated at 300 ºC for 1.5 h.

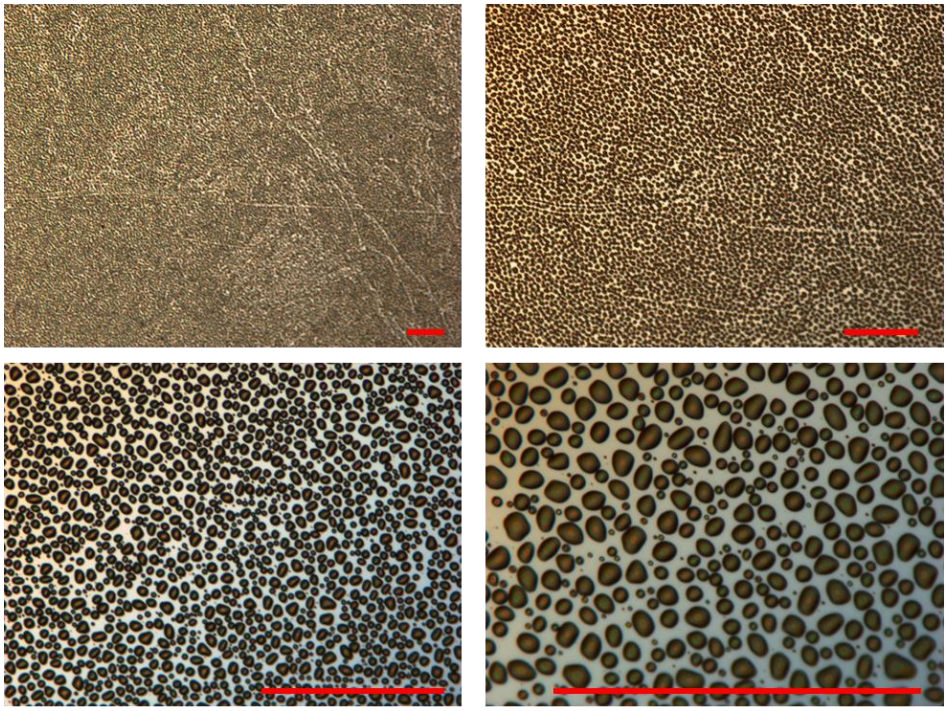

Figure S6 OM images of BCCT film evaporated at 350 ºC for 1.5 h.

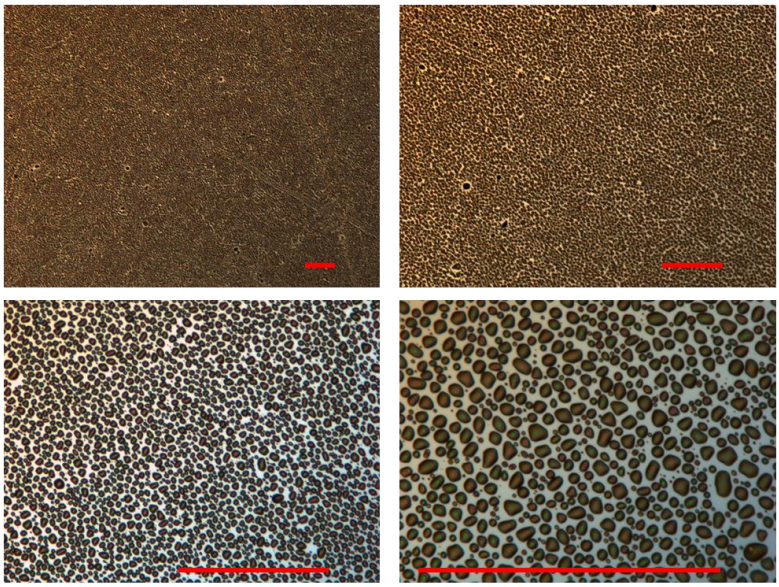

Figure S7 OM images of BCCT film evaporated at 400 ^{o}C for 1.5 h.

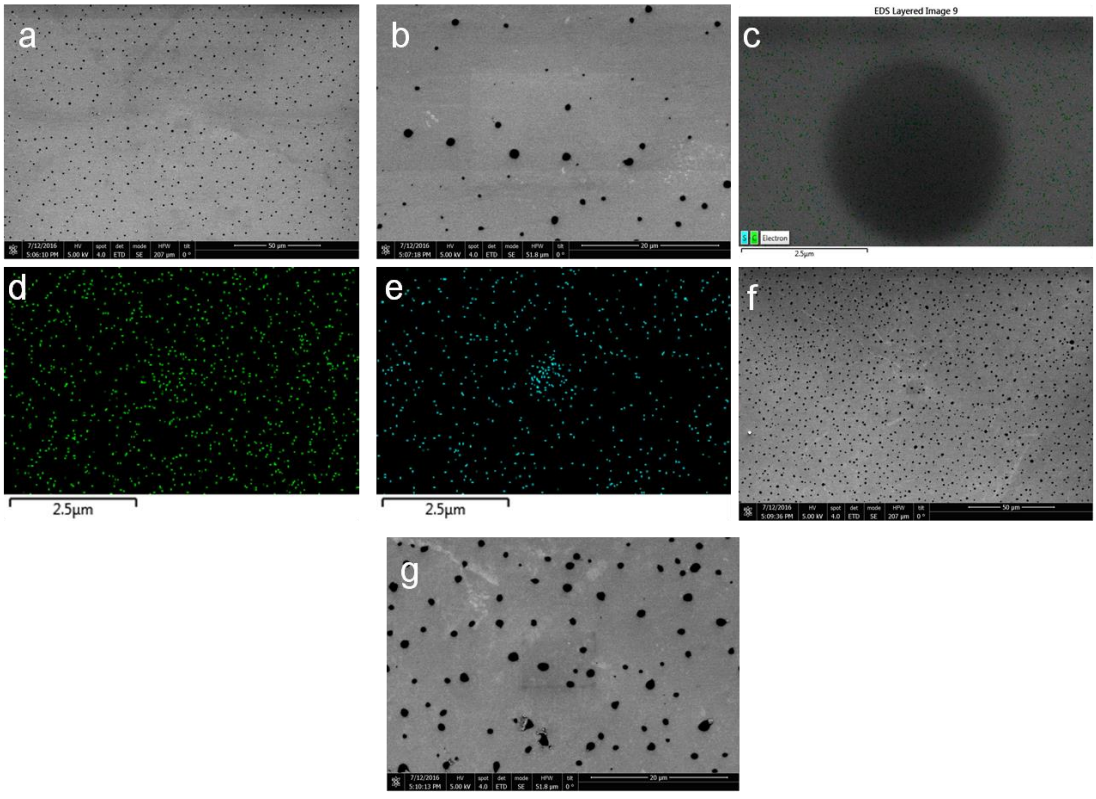

Figure S8 Scanning electron microscopy (SEM) images of BCCT film evaporated at 230 (a-b) and 265 ^{o}C (f-g) for 1.5 h, respectively. c-e, Energy dispersive X-ray spectroscopy (EDS) of carbon and sulfide elements for BCCT film evaporated at 230 ^{o}C for 1.5 h.

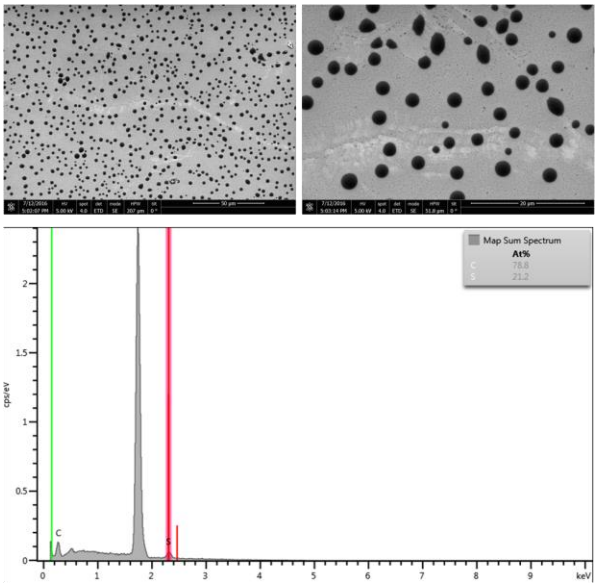

Figure S9 SEM images of BCCT film evaporated at 300 ^{o}C for 1.5 h and the ratio of carbon and sulfide obtained from EDS element mapping.

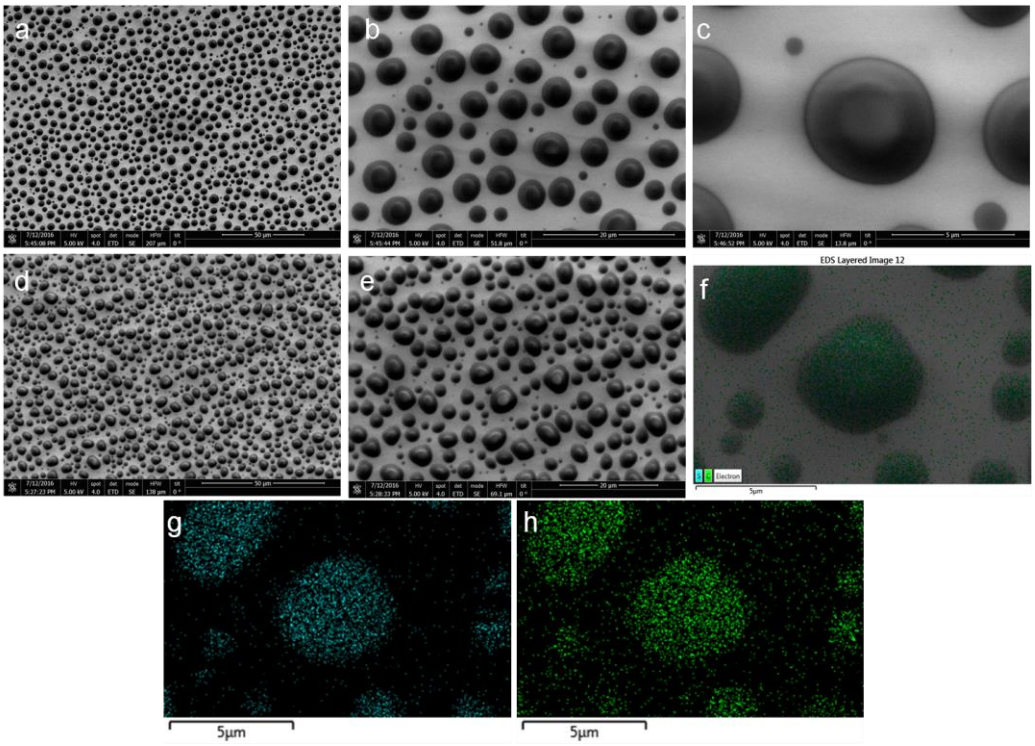

Figure S10 Scanning electron microscopy (SEM) images of BCCT film evaporated at 350 (a-c) and 400 ^{o}C (d-e) for 1.5 h, respectively. f-h, Energy dispersive X-ray

spectroscopy (EDS) of carbon and sulfide elements for BCCT film evaporated at 400 ^{o}C for 1.5 h.

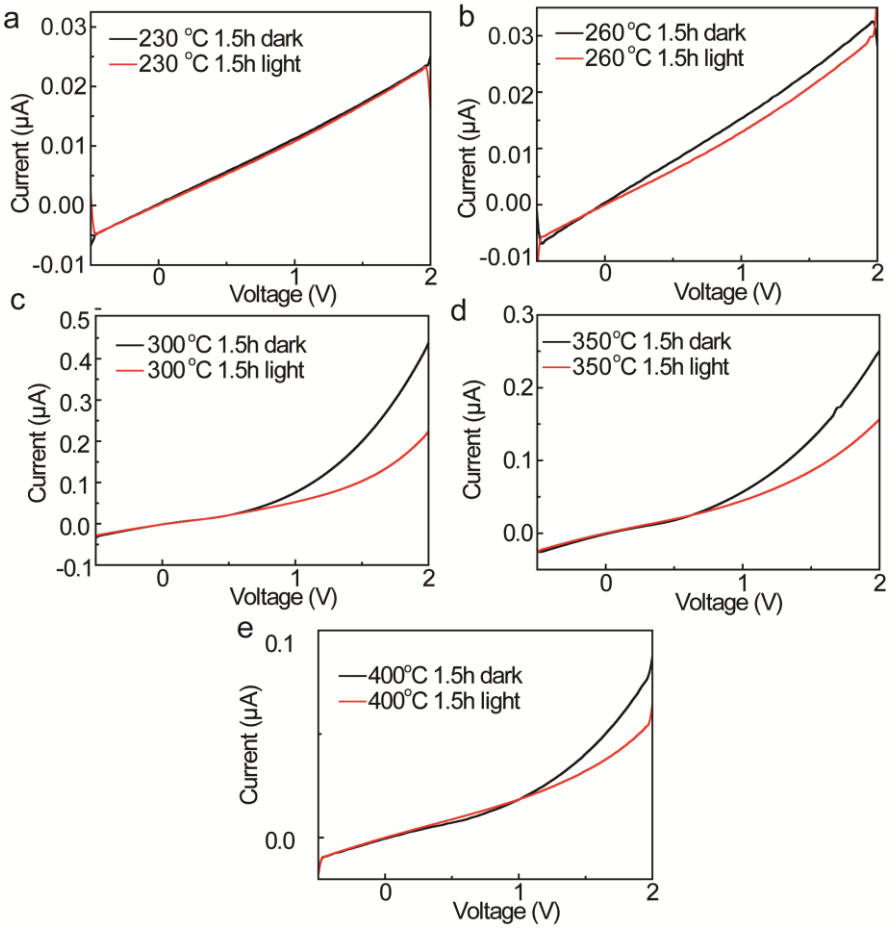

Figure S11 Current-voltage (I-V) curves of BCCT crystallized film under dark and light evaporated at 230, 260, 300, 350 and 400 ^{o}C, respectively.

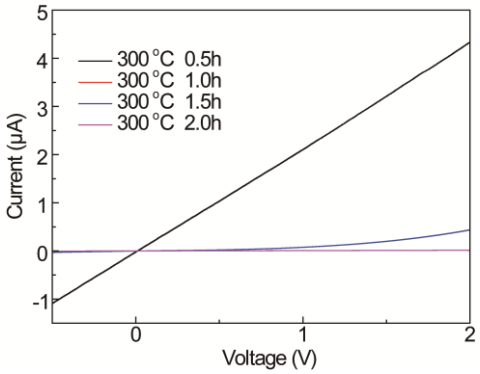

Figure S12 I-V curves of BCCT crystallized film evaporated at 300 ºC for different time.

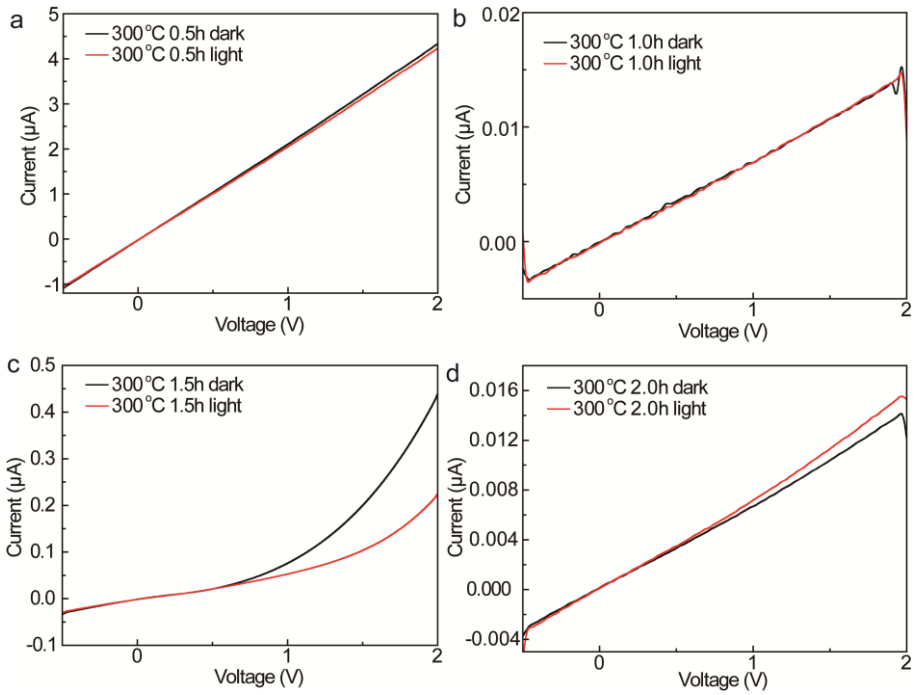

Figure S13 I-V curves of BCCT crystallized film evaporated at 300 ºC for different time under dark and light illumination.

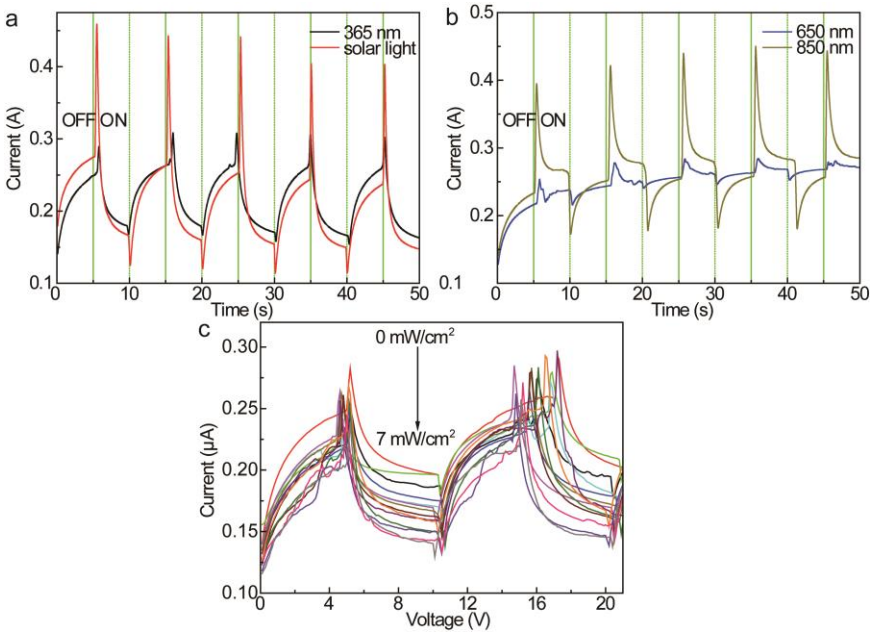

Figure S14 Photocurrent response of BCCT crystallized film evaporated at 300 ºC under different light wavelength (a-b) and light intensity at 365 nm (c).

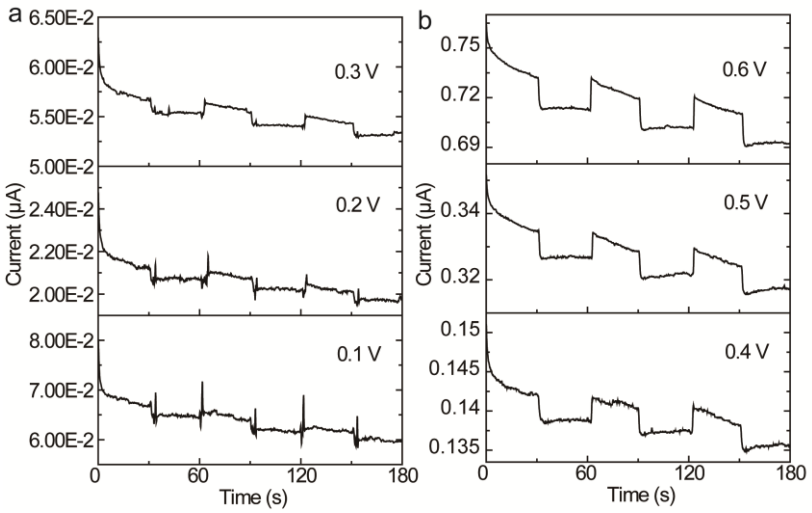

Figure S15 Current change with magnetic field on and off at 4000 Oe under different voltage.

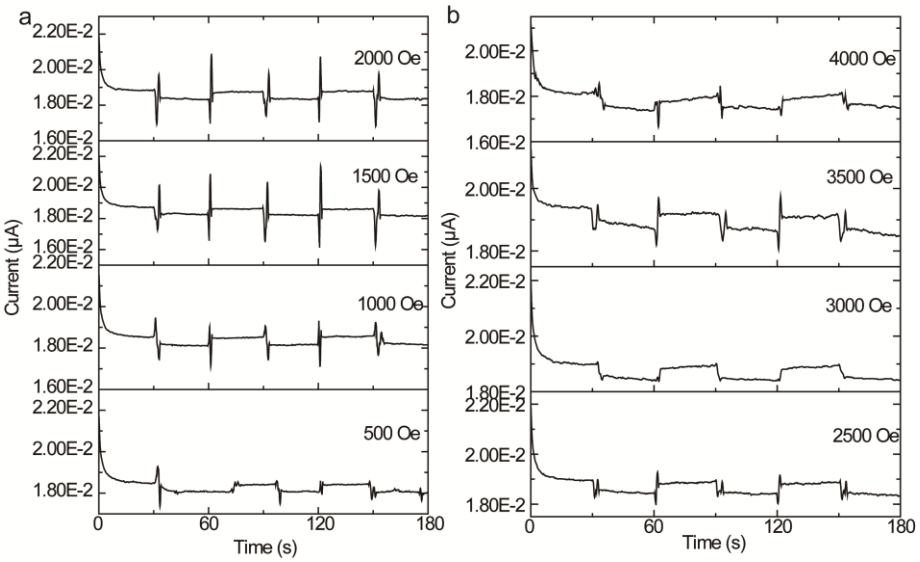

Figure S16 Current change with magnetic field on and off from 500 to 4000 Oe.

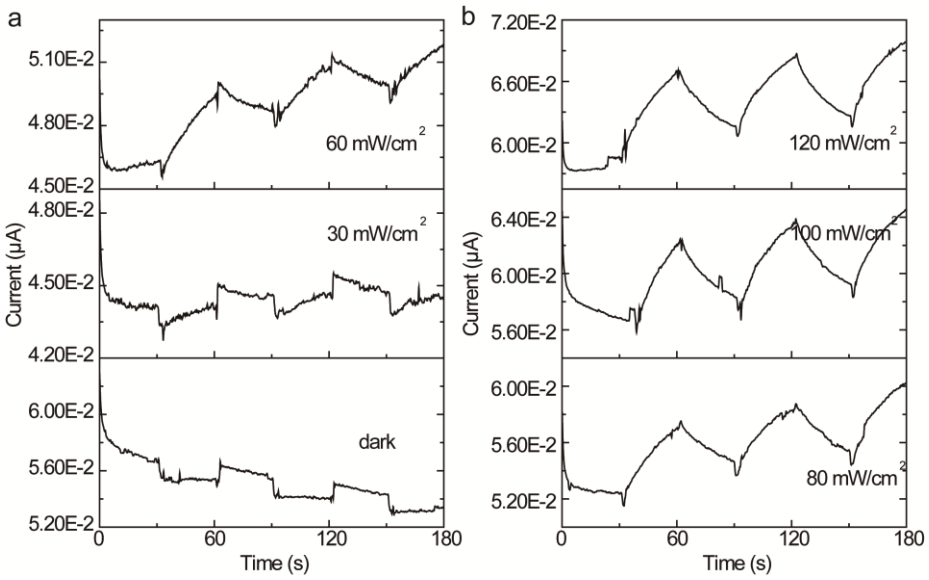

Figure S17 Current change with magnetic field on and off at 4000 Oe under dark and light. The voltage is 0.3 V.

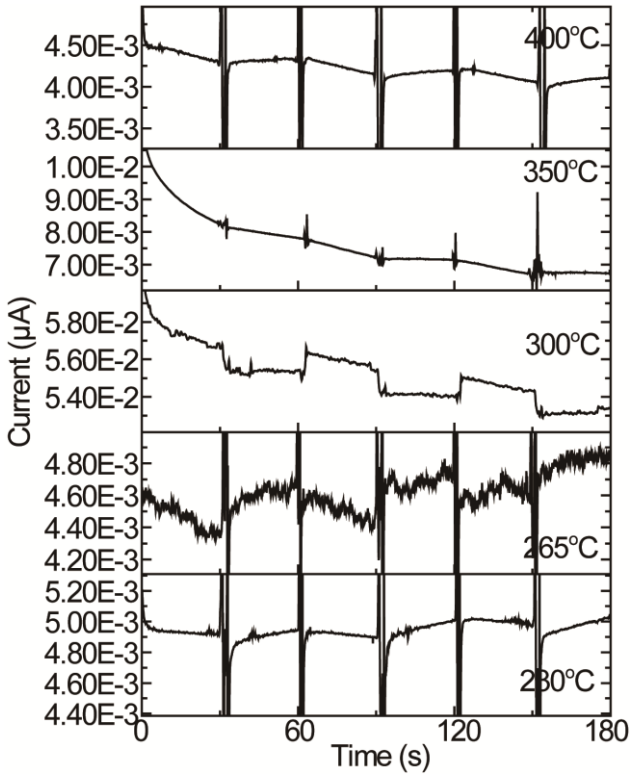

Figure S18 Current change with magnetic field on and off at 4000 Oe for BCCT crystallized film deposited at different temperatures. The voltage is 0.3 V.

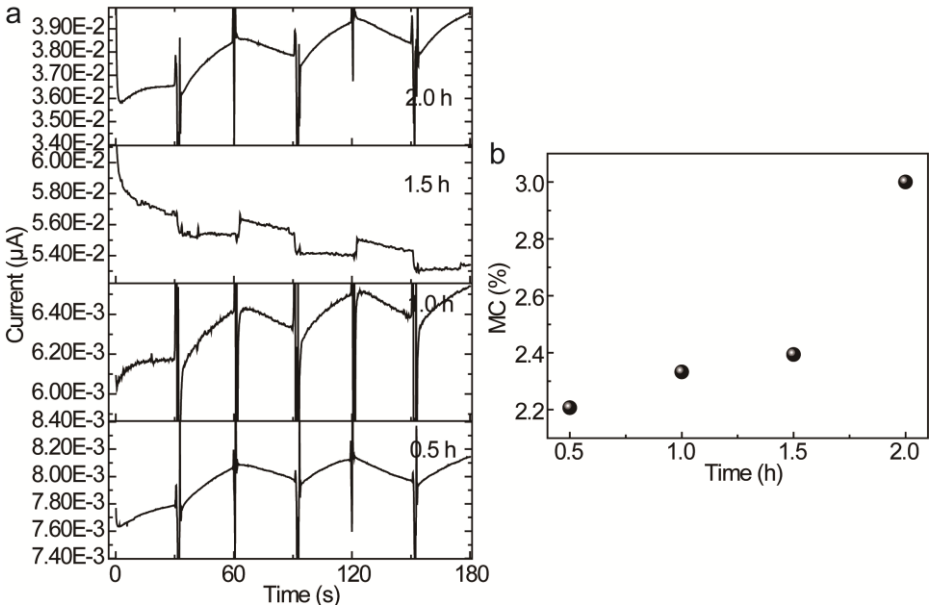

Figure S19 a, b Current change with magnetic field on and off at 4000 Oe and MC value for BCCT crystallized film deposited at 300 ºC for different time.

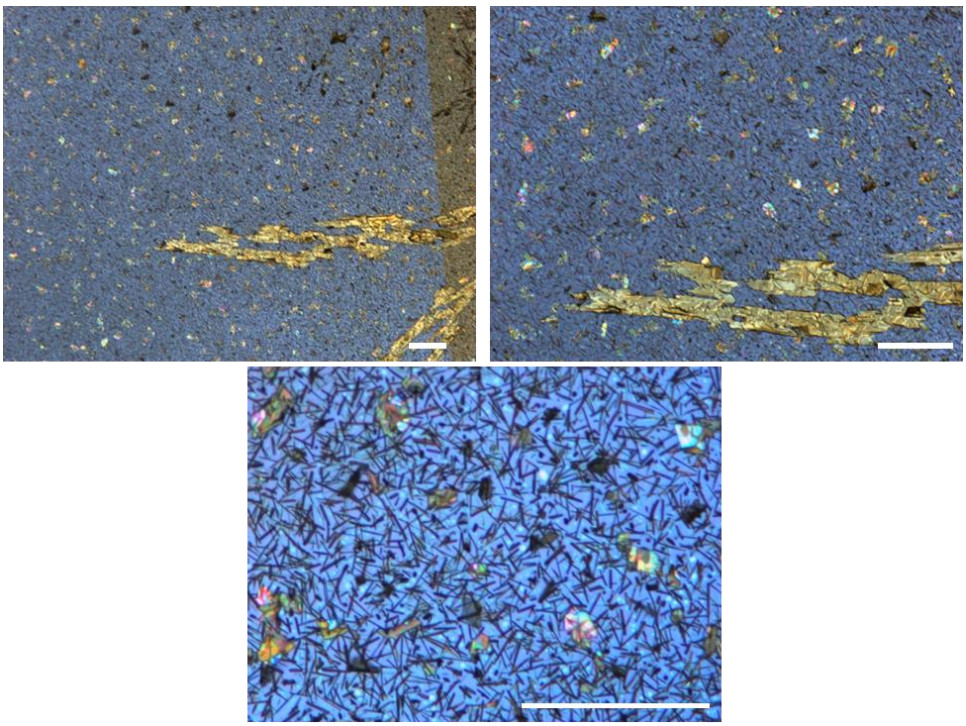

Figure S20 OM images of TTF-TCNQ (TQ) film deposited at 230 ºC for 1.5 h.

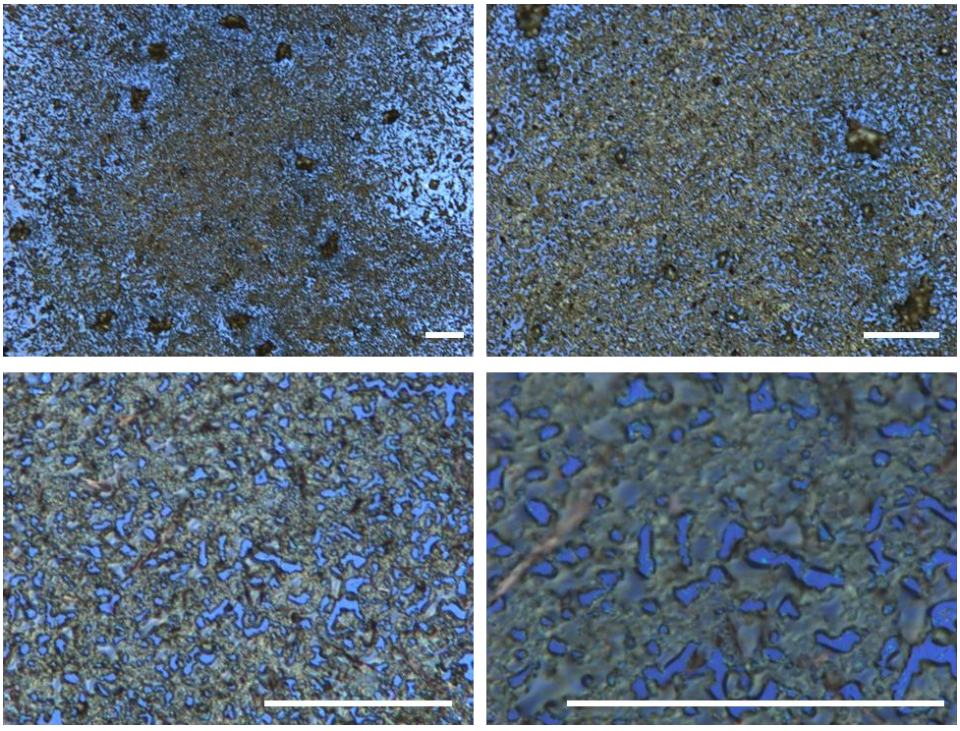

Figure S21 OM images of TQ film deposited at 250 ^{o}C for 1.5 h.

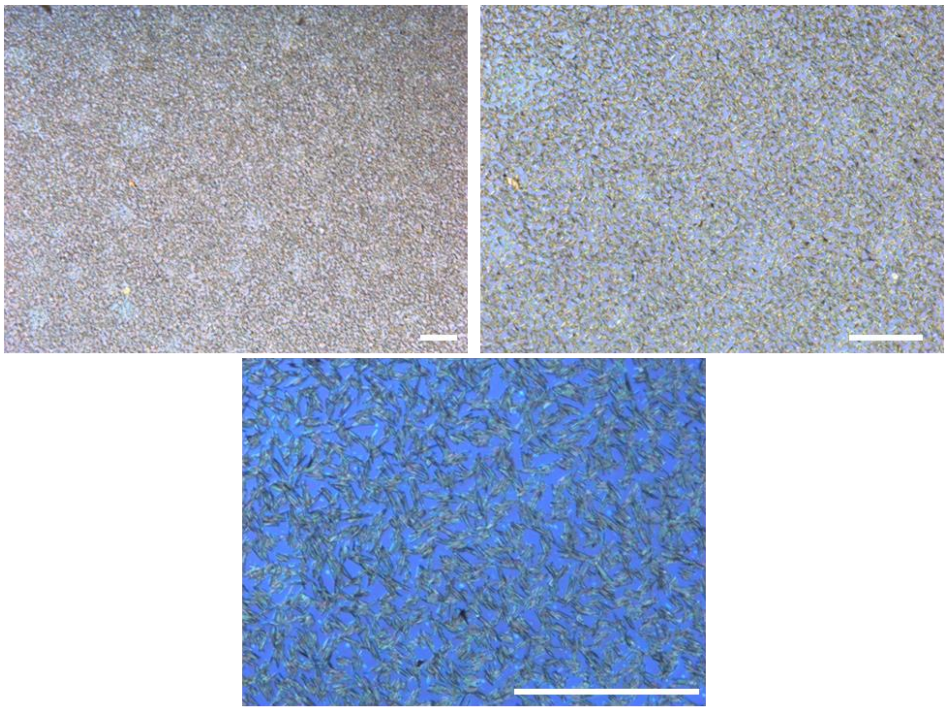

Figure S22 OM images of BCCT/TQ film. TQ film is deposited at 230 ^{o}C for 1.5 h. BCCT film is deposited at 300 ^{o}C for 1.5 h.

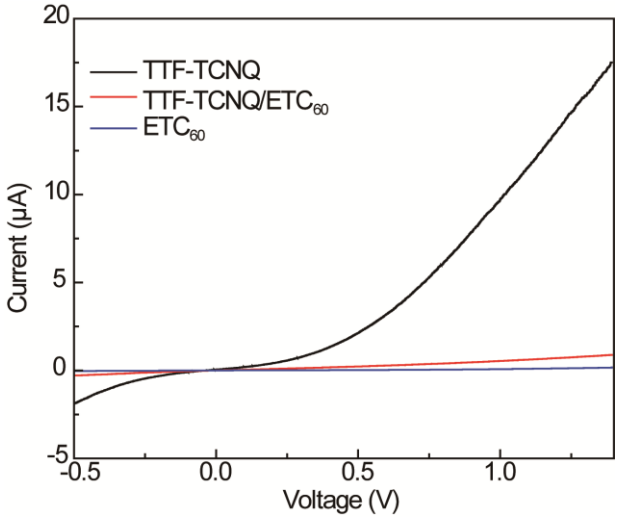

Figure S23 I-V curves of BCCT, TQ and BCCT/TQ film. TQ film is deposited at 230 ^{o}C for 1.5 h. BCCT film is deposited at 300 ^{o}C for 1.5 h.

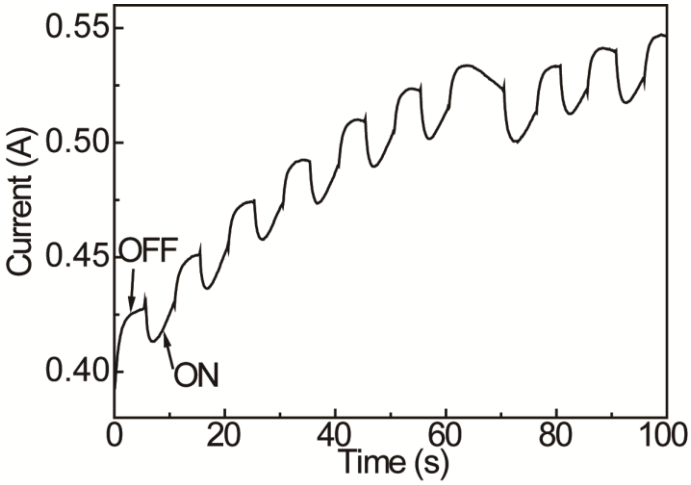

Figure S24 Photocurrent response of TQ film with light on and off. The light is illuminated from a solar simulator.