

Fabrication Conditions for Efficient Organic Photovoltaic Cells from Aqueous Dispersions of Nanoparticles

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Supporting information

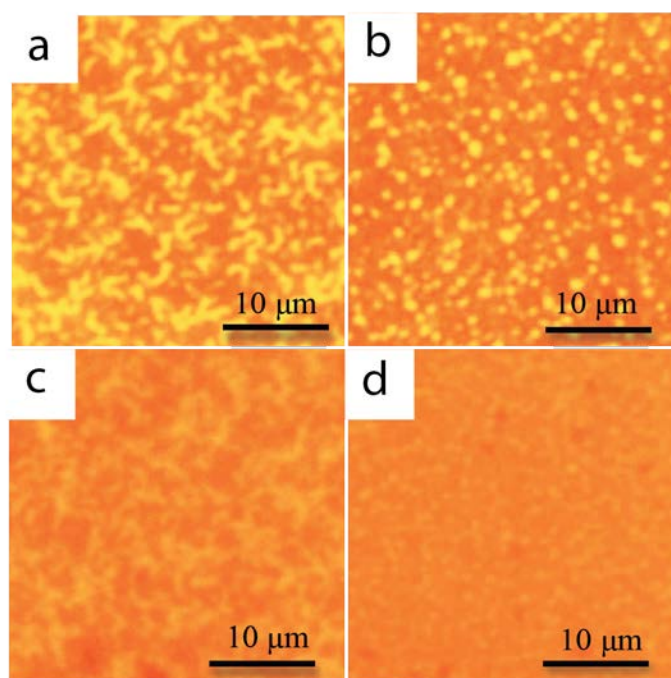


Figure S1: Transmission mode optical microscopic image of P3HT:PCBM blend nanoparticle sample spin coated on (a) as prepared PEDOT:PSS coated ITO substrate (P1). (b) UV-O3 treated PEDOT:PSS coated ITO substrate (P2) (b) as prepared PEDOT:PSS coated ITO substrate followed by a thin layer of PCBM on top (P3) (c) UV-O3 treated PEDOT:PSS coated ITO substrate followed by a thin layer of PCBM on top from 15 mg/mL concentration in dichloromethane solution (P4).

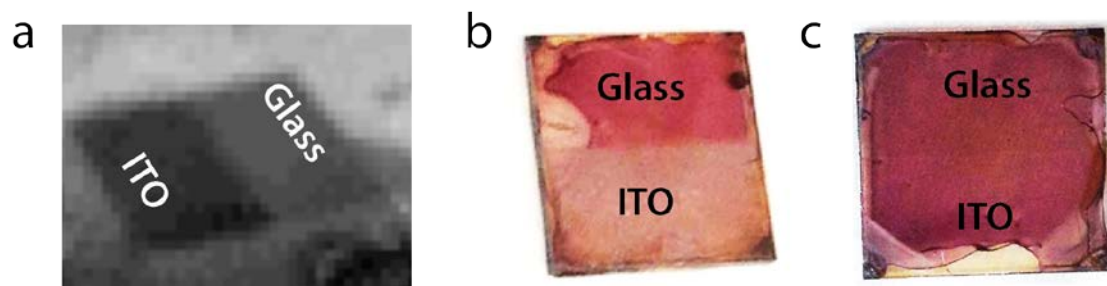


Figure S2: (a) Infra-red image of 40 nm thick PEDOT:PSS coated ITO substrate under IR lamp. (b) P3HT:PCBM blend nanoparticles spin coated on PEDOT:PSS coated ITO substrate under IR lamp but without RH control (~23%). (c) Blend nanoparticles film coated on PEDOT:PSS coated ITO substrate under IR lamp with controlled RH (~30%).

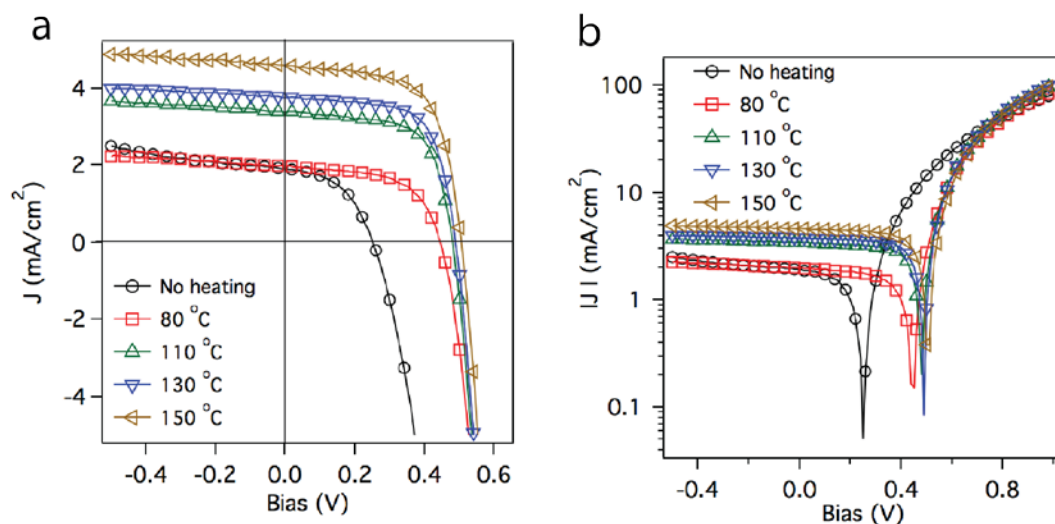


Figure S3. (a) Current-voltage curve of P3HT/PCBM blend nanoparticle solar cells under AM1.5G (100 mW/cm²) illumination of light intensity. 80±20 nm of particle size was used for device fabrication. Substrates were heated from room temperature (30 °C) to the final temperature at a rate of 5 – 10°C/min after the cathode electrode was thermally deposited. (b) I-V curve plotted in log scale.

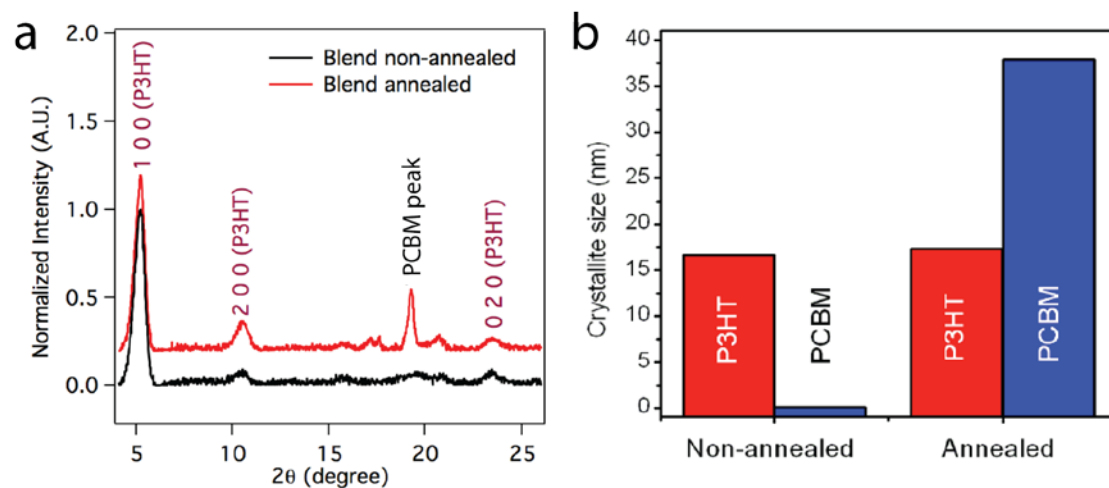


Figure S4: (a) XRD of P3HT:PCBM blend nanoparticles drop casted on glass substrate and dried under IR lamp. Annealed sample was slowly heated from 30 °C to 150 °C. (b) Crystalline size estimated from the width of the XRD peak.