

Growth behaviours of pentacene films confined in engineered shapes of ionic-liquid in vacuum

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Supplementary information

The wettability of IL on ITO was examined by the measurement of contact angles (C.A.) for an IL droplet put on differently-treated ITO substrates in a vacuum. The C. A. was measured at 10 min after the IL dropped on the substrate under 10^{-6} Torr. The IL was used after degassed for overnight in a vacuum. The C.A. of the IL was estimated as 15° (the average of 3 point was $15.6 \pm 1.5^\circ$) on the ITO without any treatment and less than 3° (on two different substrate) on the PEDOT:PSS coated ITO.

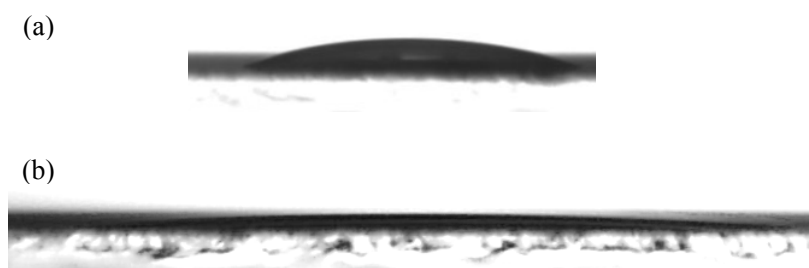


Figure S1. The photograph of contact angle measurements on no-treatment ITO (a) and PEDOT:PSS coated ITO (b).

The heights of the two-type crystals were estimated by using the co-focal laser microscope, to be about 20 nm for the platelet-crystal and 120 nm for the bulky-crystal, respectively.

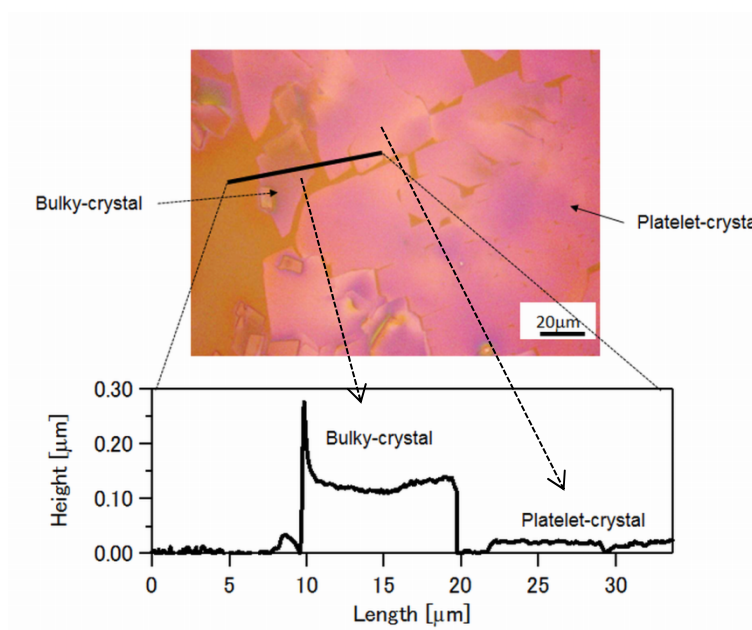


Figure S2. The cross-sectional height profile of the platelet and bulky crystals using a confocal laser microscope.

The crystal area with the deposition time was obtained by using image J software for the binary image captured every 1 sec. The average lateral length of each platelet crystal was calculated as square of the area.

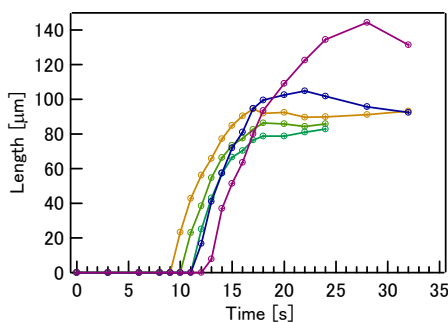


Figure S3. The growth in the lateral direction was plotted for 5 crystals, respectively.

The crystal growth in the homogeneously thick IL layer results in strong adhesion ability to the substrate. However, the smaller, but thicker bulky crystals of the two kinds of pentacene crystals were apt to separate from the substrate after rinsed. Fig. S4 shows that some of the bulky crystals surrounding platelet-crystals were removed after rinsed.

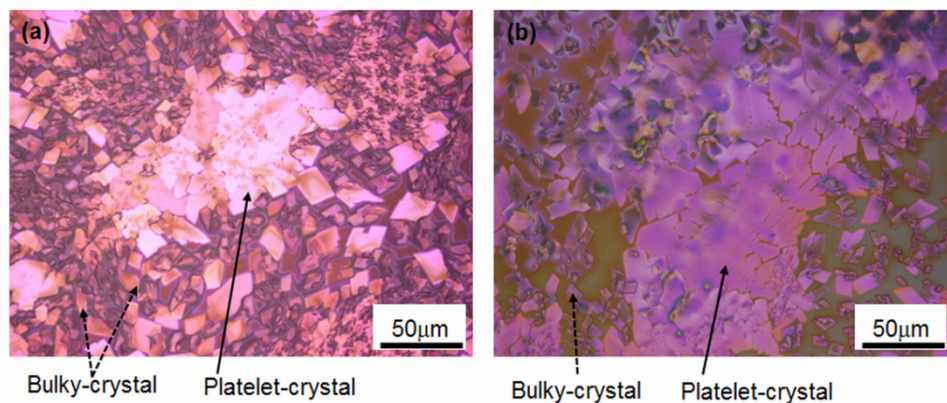


Figure S4. The optical microscope images of the sample, (a) before and (b) after rinsed.