

Electronic supplementary information (ESI) for

**Self-assembly and charge carrier transport of solution-processed  
conjugated polymer monolayers on dielectric surfaces with controlled  
sub-nanometer roughness**

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Table S1 The surface roughness of **S1-S4**.

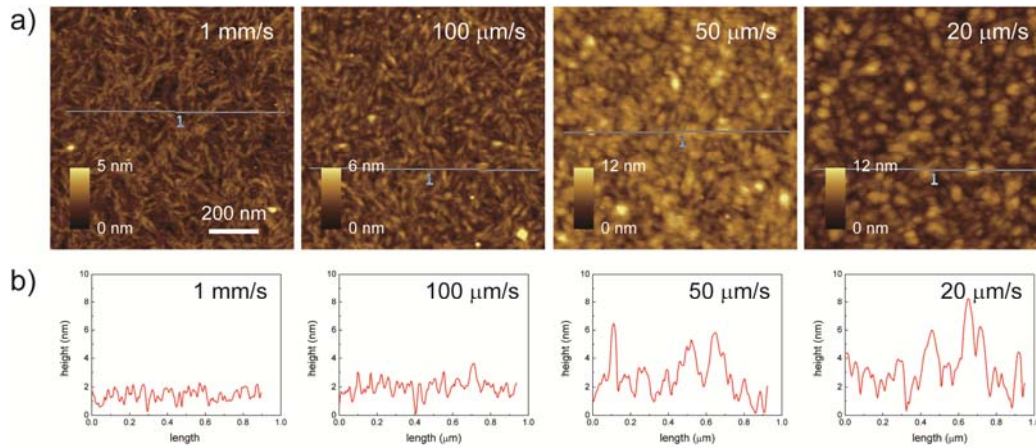
dielectric	<b>S1</b>	<b>S2</b>	<b>S3</b>	<b>S4</b>
$R_{ms}$ (nm)	0.19±0.01	0.27±0.03	0.30±0.02	0.39±0.04

Table S2 The average ( $\mu_{ave}$ ) and maximum mobilities ( $\mu_{max}$ ) of PCPDTBT monolayers on **S1-S4**. (unit:  $\text{cm}^2 \text{V}^{-1} \text{s}^{-1}$ )

dielectric	<b>S1</b>	<b>S2</b>	<b>S3</b>	<b>S4</b>
$\mu_{ave}$ ( $\times 10^{-4}$ )	5.08±0.67	3.65±1.34	3.40±0.59	1.01±0.23
$\mu_{max}$ ( $\times 10^{-4}$ )	6.42	3.82	3.96	1.18

Table S3 The on/off ratio and threshold voltage of PCPDTBT monolayers on **S1-S4**.

dielectric	<b>S1</b>	<b>S2</b>	<b>S3</b>	<b>S4</b>
$I_{on}/I_{off}$	$10^3$	$10^2 \sim 10^3$	$10^3 \sim 10^4$	$10^2 \sim 10^3$
$V_{th}$ (V)	-20~-15	-5~0	-25~-5	-20~-10



**Fig. S1** AFM images (a) and corresponding height plots (b) of PCPDTBT thin films deposited on bare  $\text{SiO}_2$  substrate at various dip-coating speeds. The maximum heights coincide with one, two, three and four polymer layers for 1 mm/s, 100  $\mu\text{m/s}$ , 50  $\mu\text{m/s}$  and 20  $\mu\text{m/s}$ , respectively.