

Supporting Information

Interfacial Effects on Solution-Sheared Thin-Film Transistors

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Table S1. Summary of solution-sheared PBDT-*co*-TT field-effect transistors based on different interfaces. Note that the mobilities were estimated from the region of the high gate voltages (-40 to -60 V).

	Bare SiO ₂ substrate	PBTS-modified SiO ₂ substrate	OTS-modified SiO ₂ substrate
Speed (mm/s)	μ^{avg} (cm ² V ⁻¹ s ⁻¹)		
0.1	$(3.80 \pm 0.8) \times 10^{-3}$	$(1.64 \pm 0.3) \times 10^{-1}$	$(4.02 \pm 0.8) \times 10^{-2}$
0.2	$(1.17 \pm 0.2) \times 10^{-2}$	$(9.76 \pm 2.0) \times 10^{-2}$	$(2.03 \pm 0.4) \times 10^{-2}$
0.3	$(1.48 \pm 0.3) \times 10^{-2}$	$(2.36 \pm 0.5) \times 10^{-1}$	$(1.35 \pm 0.3) \times 10^{-1}$
0.4	$(1.00 \pm 0.2) \times 10^{-2}$	$(1.49 \pm 0.3) \times 10^{-1}$	$(1.40 \pm 0.3) \times 10^{-1}$
0.5	$(2.19 \pm 0.4) \times 10^{-2}$	$(2.68 \pm 0.5) \times 10^{-1}$	$(1.50 \pm 0.3) \times 10^{-2}$
1	$(1.57 \pm 0.3) \times 10^{-2}$	$(1.00 \pm 0.2) \times 10^{-1}$	$(7.54 \pm 1.5) \times 10^{-2}$
1.5	$(1.62 \pm 0.3) \times 10^{-2}$	$(1.55 \pm 0.3) \times 10^{-1}$	$(5.05 \pm 1.0) \times 10^{-2}$
2	$(3.00 \pm 0.6) \times 10^{-2}$	$(3.86 \pm 0.8) \times 10^{-2}$	$(6.36 \pm 1.3) \times 10^{-2}$

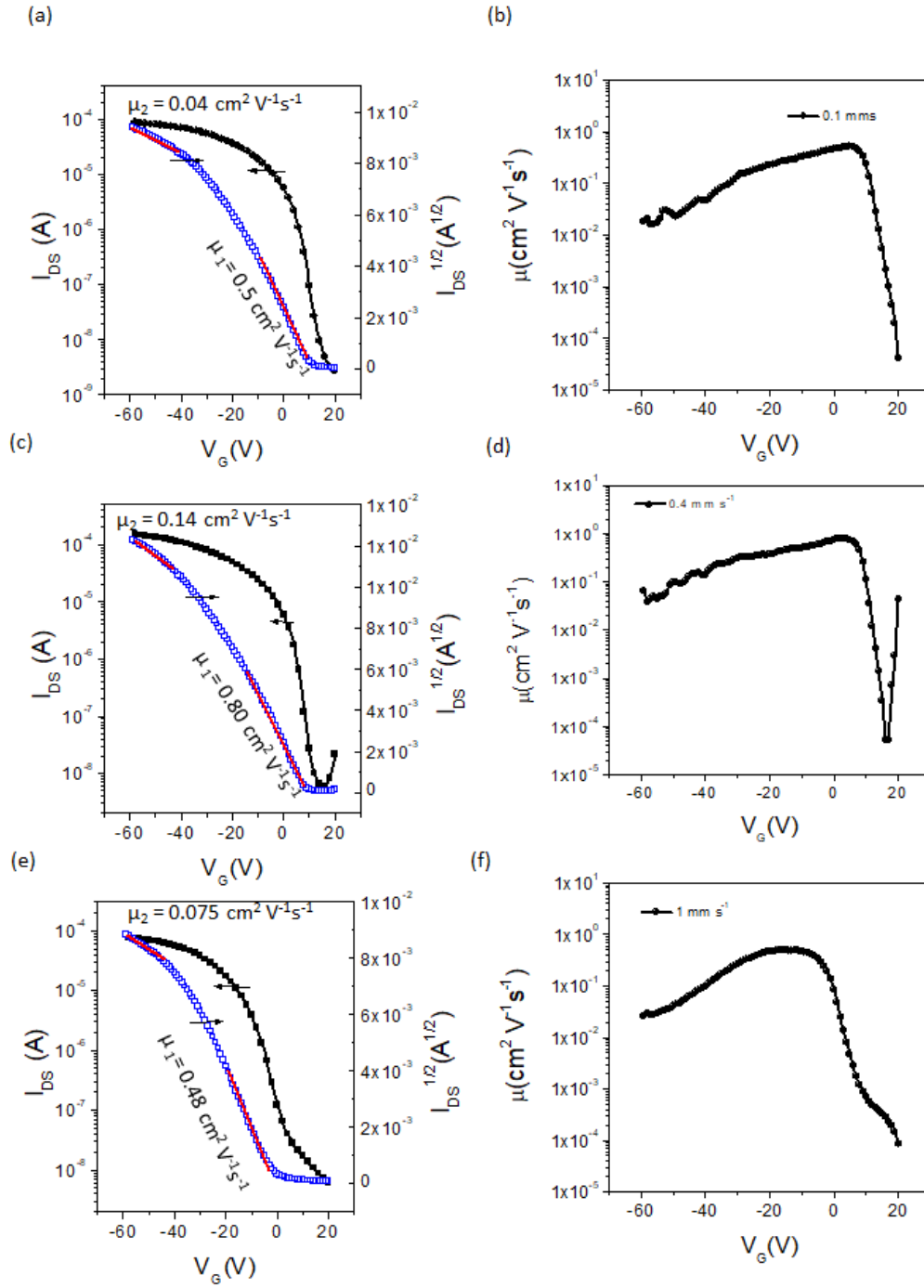


Figure S1. Transfer curves and mobility dependence of the devices made on the OTS-modified substrates in the shearing speed of (a, b) 0.1, (c,d) 0.4 and (b, d) 1 mm s⁻¹, respectively.

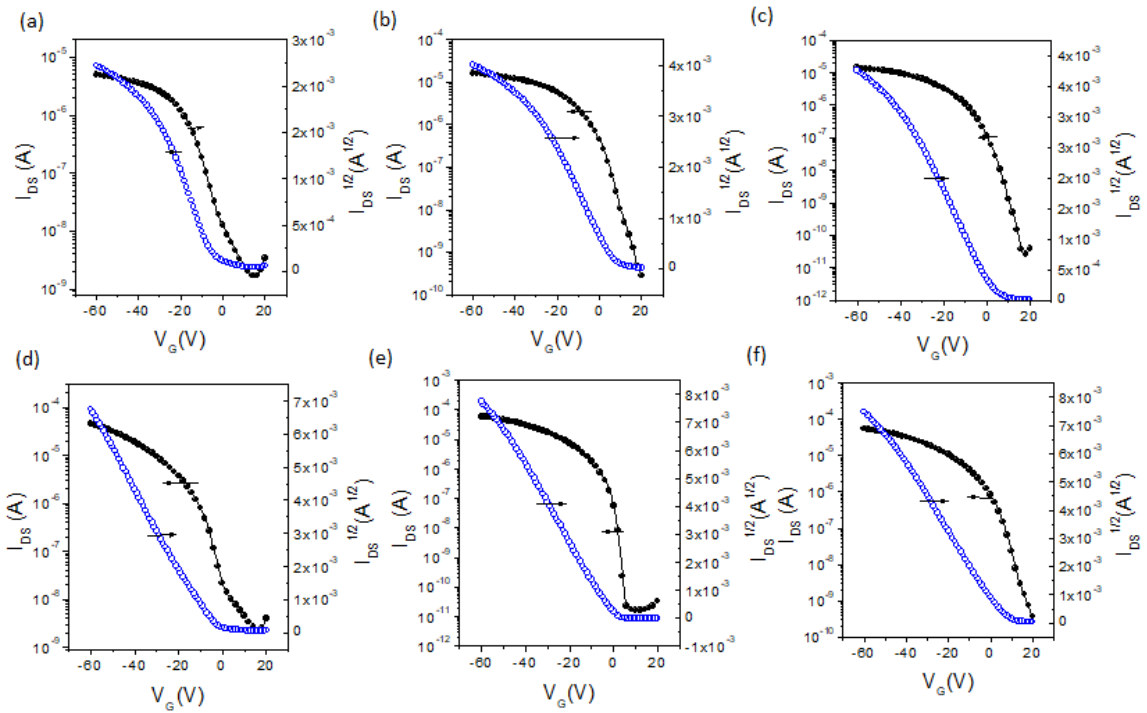


Figure S2. Transfer curves of the devices made in the shearing speed of (a, d) 0.1, (b, e) 0.4 and (c, f) 1 mm s⁻¹ on bare and PBTS-modified substrates, respectively

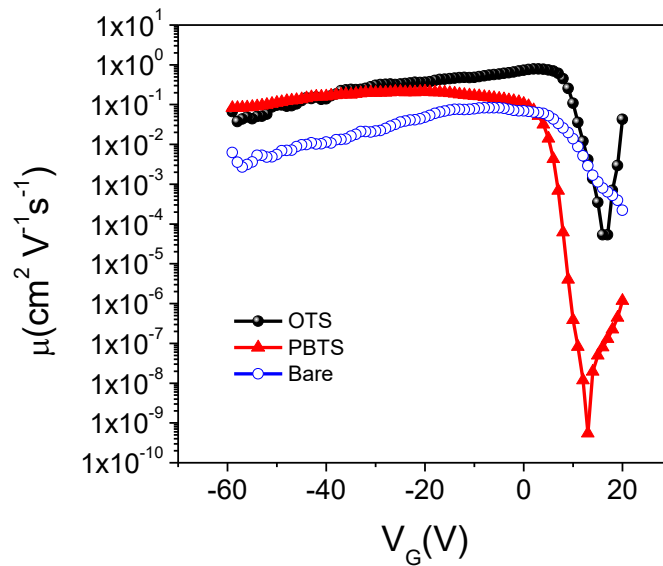
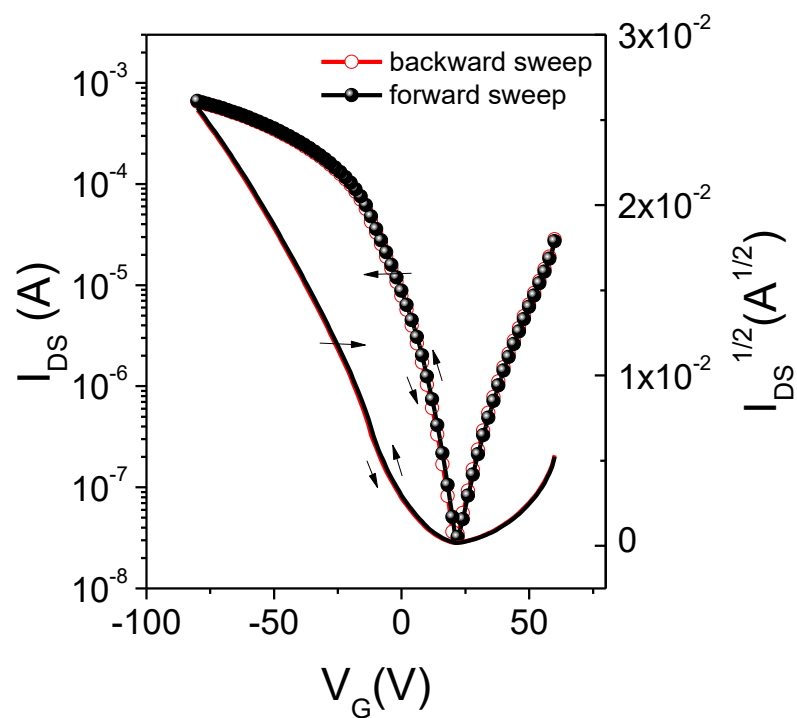


Figure S3. Mobility dependence of the devices made in the shearing speed of 0.4 mm s⁻¹ on bare, PBTS- and OTS-modified substrates, respectively.



μ^{avg} ($\text{cm}^2\text{V}^{-1}\text{s}^{-1}$)	μ^{max} ($\text{cm}^2\text{V}^{-1}\text{s}^{-1}$)	On/off	$V_{\text{th}}^{\text{avg}}$ (V)
1.44 ^a (0.71) ^b	1.77 ^a	2×10^4	6 ± 3

^a. Mobilities were estimated from the low gate voltage (0 to -20 V).

^b. Mobility was calculated from the high gate voltage (-40 to -60 V).

Figure S4. Forward and backward transfer curves of the solution sheared polymer field-effect transistors prepared from the DCB solution. The transistor characteristics are summarized in the inserted table.

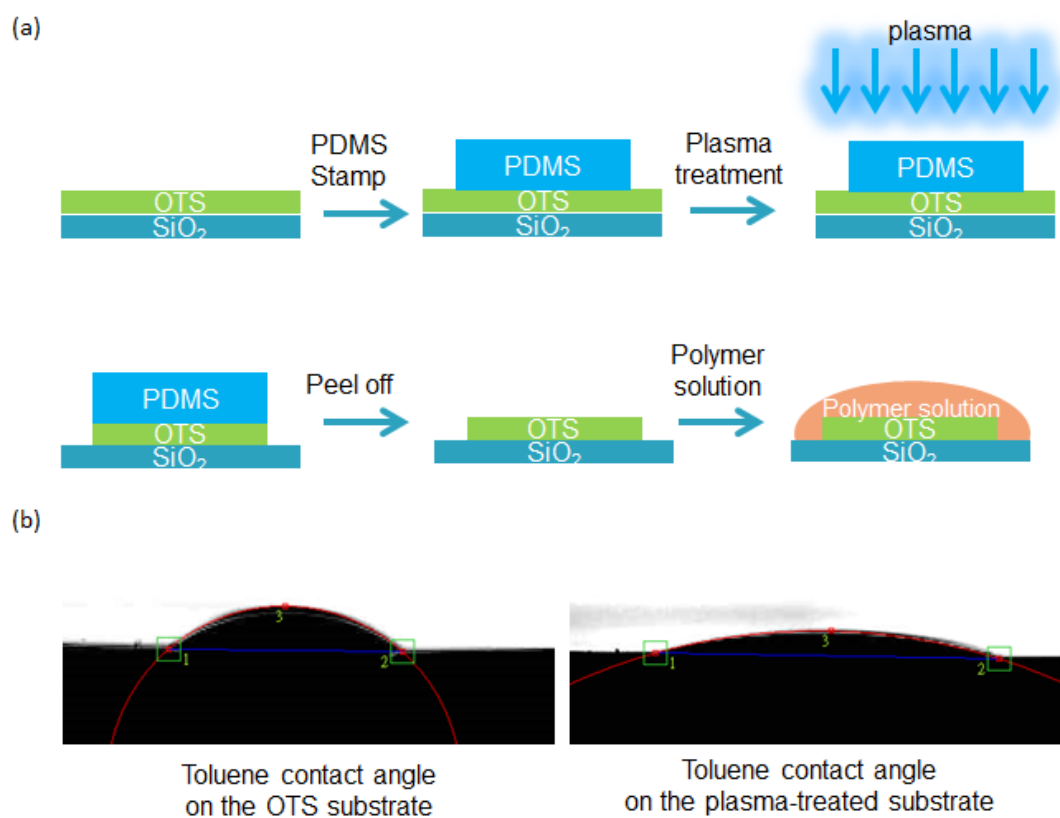


Figure S5. (a) Schematic plasma patterning processes on OTS-modified substrates. (b) The bottom images are the toluene contact angle images before and after plasma treatment of OTS substrates.

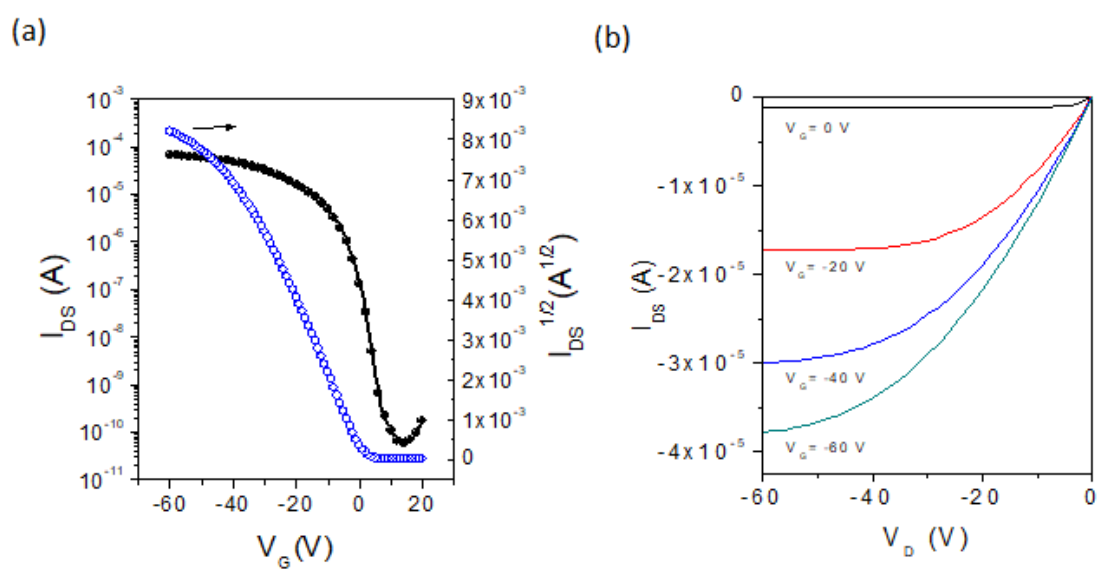


Figure S6. (a) transfer curves and (b) output characteristics of spin-coated devices made on an OTS-modified substrate.

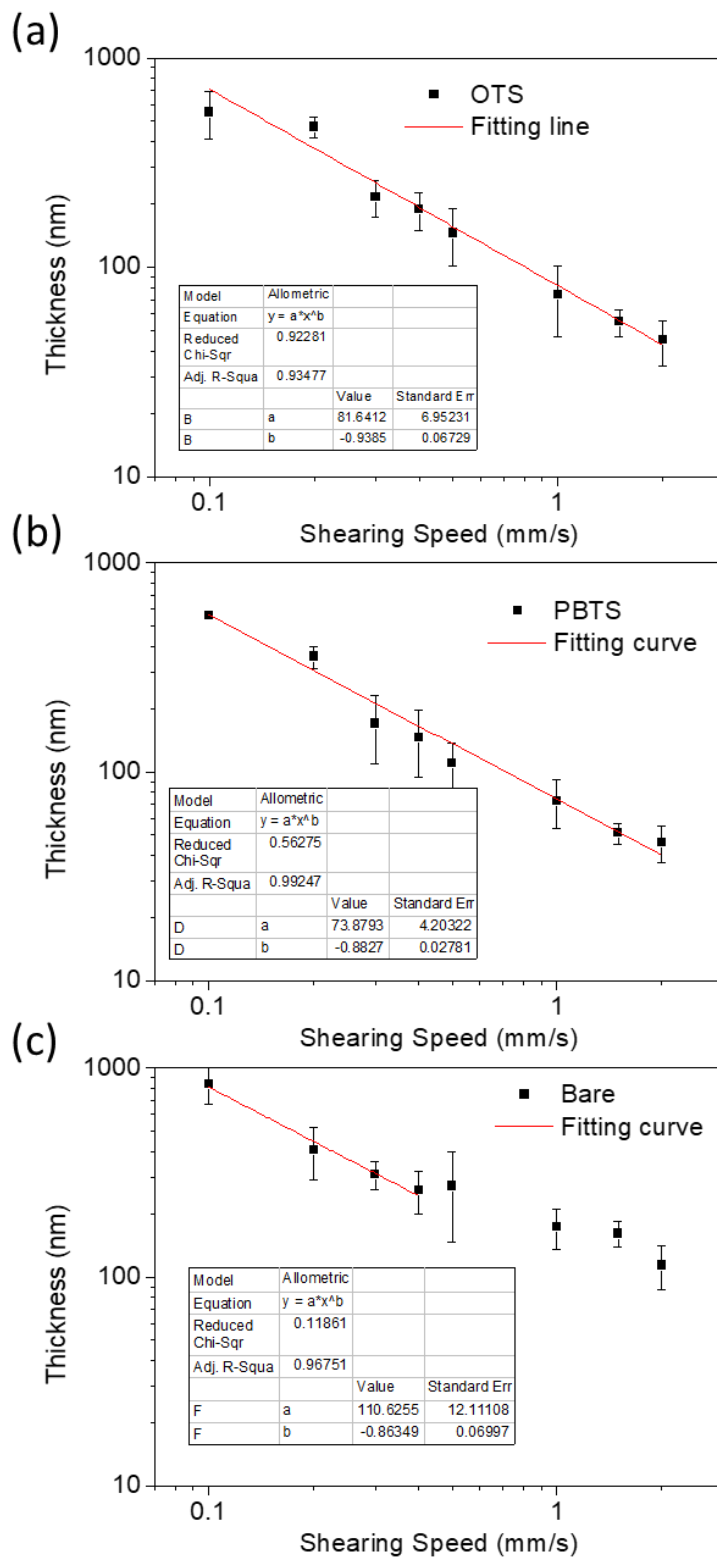


Figure S7. Thickness analysis of the (a) OTS, (b) PBTS and (c) bare SiO₂ substrates, respectively. The red curve is the fitting curve of the power law dependence. Note that the fitting range of the bare SiO₂ substrate is only between 0.1 to 0.4 mm s⁻¹, because the thickness curve become flatten when the speed is over 0.5 mm s⁻¹.

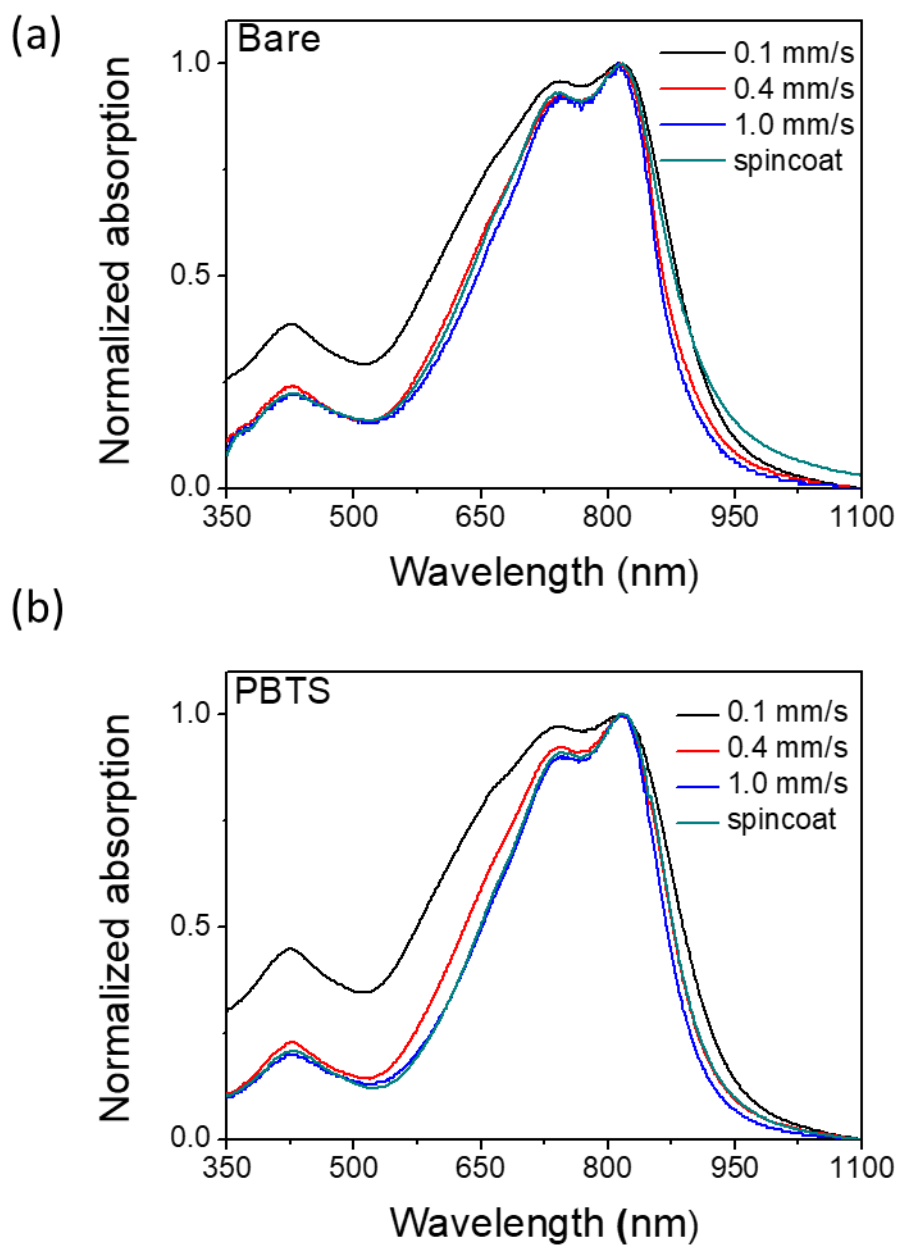


Figure S8. UV-vis spectra of the PBBDT-co-TT prepared on the bare SiO₂ and PBTS-modified substrates under different shearing speeds, respectively.