

Supporting Information

The Influence of Branched Alkyl Side Chains in A-D-A Oligothiophenes on the Photovoltaic Performance and Morphology of Solution-processed Bulk-heterojunction Solar Cells

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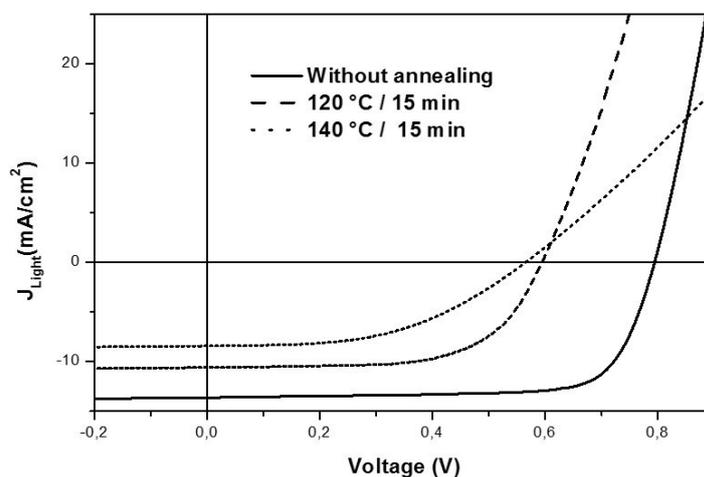


Figure S1: J-V curves of optimized solar cells using oligomer 2 as donor that were exposed individually to a single post-annealing step during 15 min with temperatures of 120°C and 140°C, respectively

Table S1: Photovoltaic parameters of optimized solar cells using oligomer 2 as donor that were exposed individually to a single post-annealing step f 15 min with temperatures of 120°C and 140°C, respectively.

	J_{sc} [mA/cm ²]	V_{oc} [V]	FF [%]	PCE [%]
Without annealing	13.62	0.79	75	8.16
120 °C/15 min	10.58	0.59	64	4.02
140 °C/15 min	8.42	0.57	49	2.33

Table S2: Thin film transistor data of spin-coated oligomers **1** and **2** based thin films from chloroform solutions at 8 mg/mL.

		μ ($\text{cm}^2 \cdot \text{V}^{-1} \cdot \text{s}^{-1}$)	V_t (V)
1	w/o SVA	$4.5\text{-}6.3 \times 10^{-4}$	2.2-3.5
	with SVA	$0.54\text{-}1.8 \times 10^{-3}$	1.1-4
2	w/o SVA	$5.7\text{-}6.4 \times 10^{-5}$	8-8.5
	with SVA	$0.42\text{-}1.15 \times 10^{-4}$	1.8-6

(solutions: one night at 60°C and cooling down before spin coating at 2000 rpm for 1min)

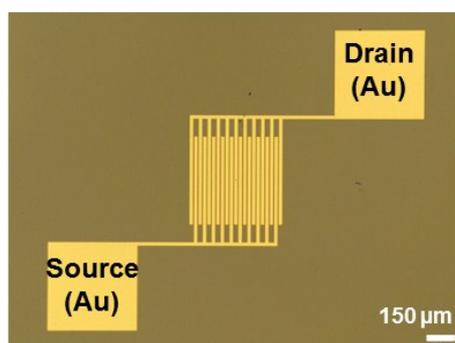


Figure S2: Optical microscopy image of interdigital structures used for transistor application (with $L = 20 \mu\text{m}$, $W = 1 \text{ cm}$, $C = 14.6 \cdot 10^{-9} \text{ F/cm}^2$).

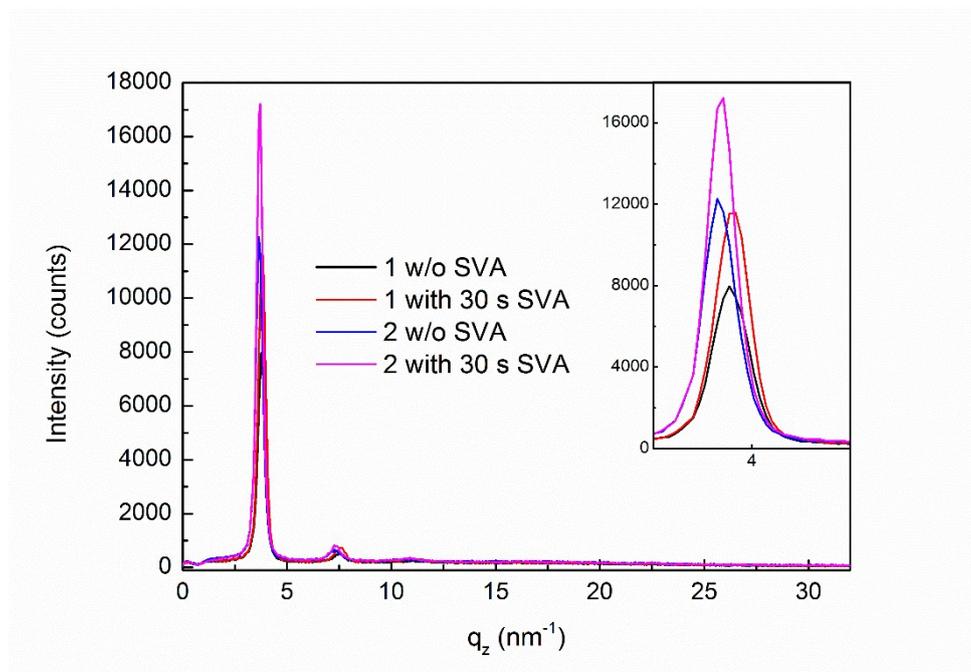


Figure S3. Profiles along the (100) peak before and after the 30 s SVA treatment of pure oligomer **1** and **2** layers.

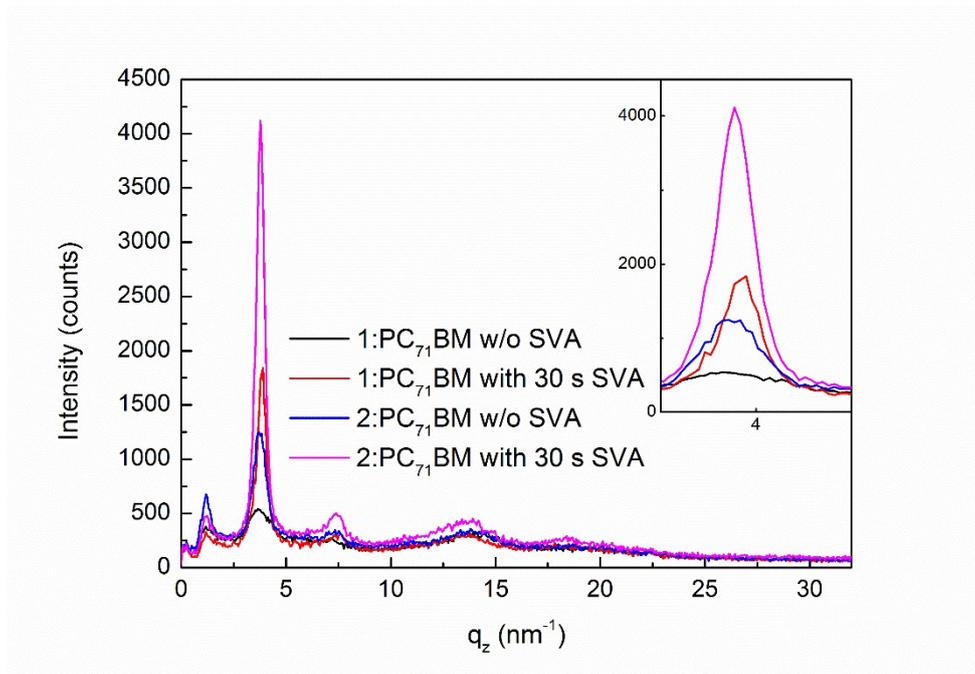


Figure S4. Profiles along the (100) peak before and after the 30 s SVA treatment of 1:PC₇₁BM and 2:PC₇₁BM blend layers.

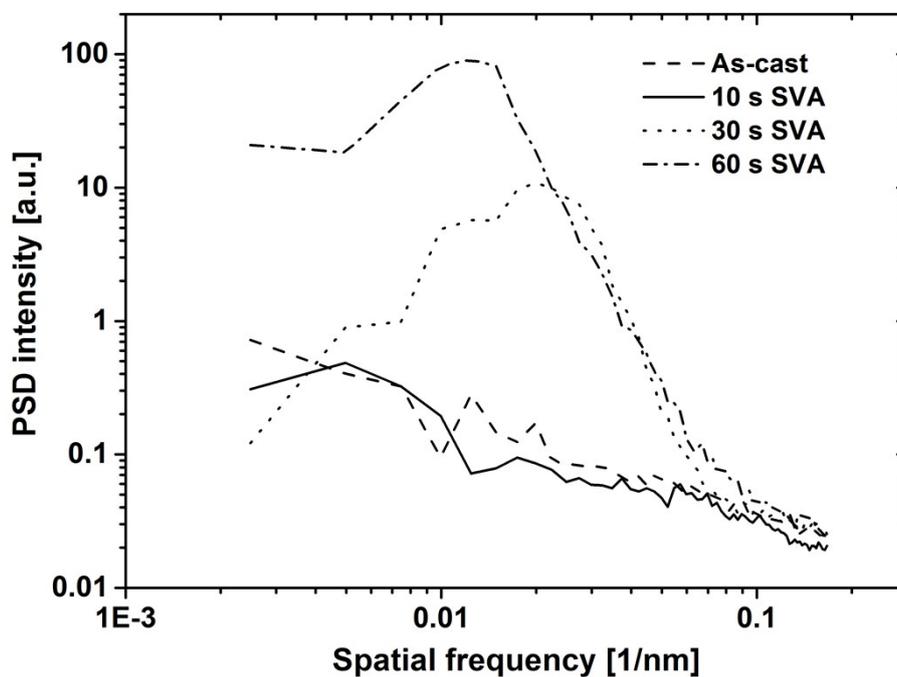


Figure S5. Calculated PSDs for laterally resolved plasmon-peak maps of blends after different SVA times. Larger signal indicates increased occurrence of specific domain sizes.