

Supporting Information

Tuning the molecular order of C₆₀-based self-assembled monolayers in field-effect transistors

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Supplementary Figures

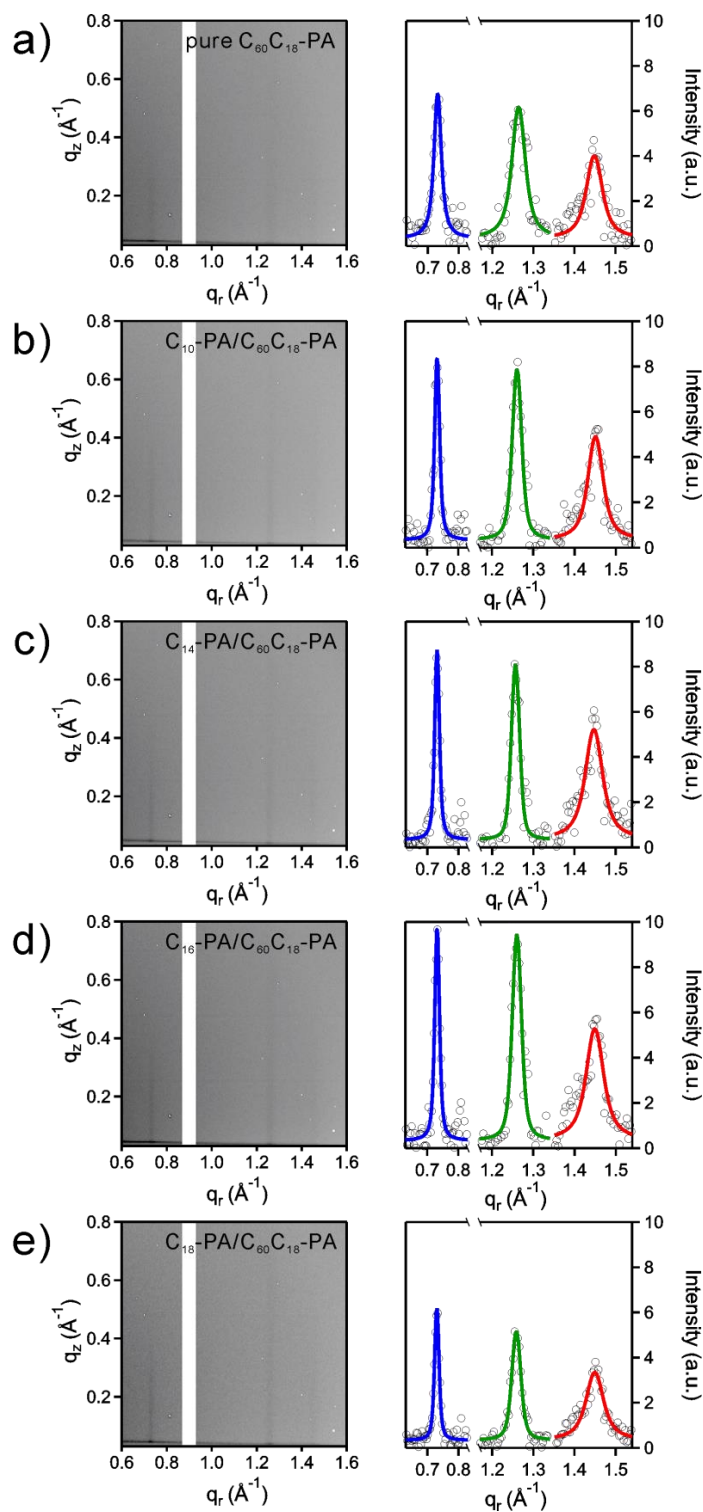


Figure S1: Results of grazing incidence X-ray diffraction measurements on C_{60} -based SAMs with diffraction maps in (q_r/q_z) -space, extracted and background-corrected profiles and corresponding Lorentzian fits of a pure $C_{60}C_{18}$ -PA SAM and mixed alkyl-PA/ $C_{60}C_{18}$ -PA SAMs (alkyl-PAs with chain length from C_{10} to C_{18}), each showing three Bragg rods.

Table S1: Peak positions and corresponding lattice d-spacing for the three obtained Bragg rods in C₆₀C₁₈-PA based self-assembled monolayers:

Reflex	Peak position	Lattice d-spacing
(10)	$0.733 \text{ \AA}^{-1} \pm 0.004 \text{ \AA}^{-1}$	$8.57 \text{ \AA} \pm 0.04 \text{ \AA}$
(11)	$1.26 \text{ \AA}^{-1} \pm 0.004 \text{ \AA}^{-1}$	$4.98 \text{ \AA} \pm 0.04 \text{ \AA}$
(20)	$1.45 \text{ \AA}^{-1} \pm 0.004 \text{ \AA}^{-1}$	

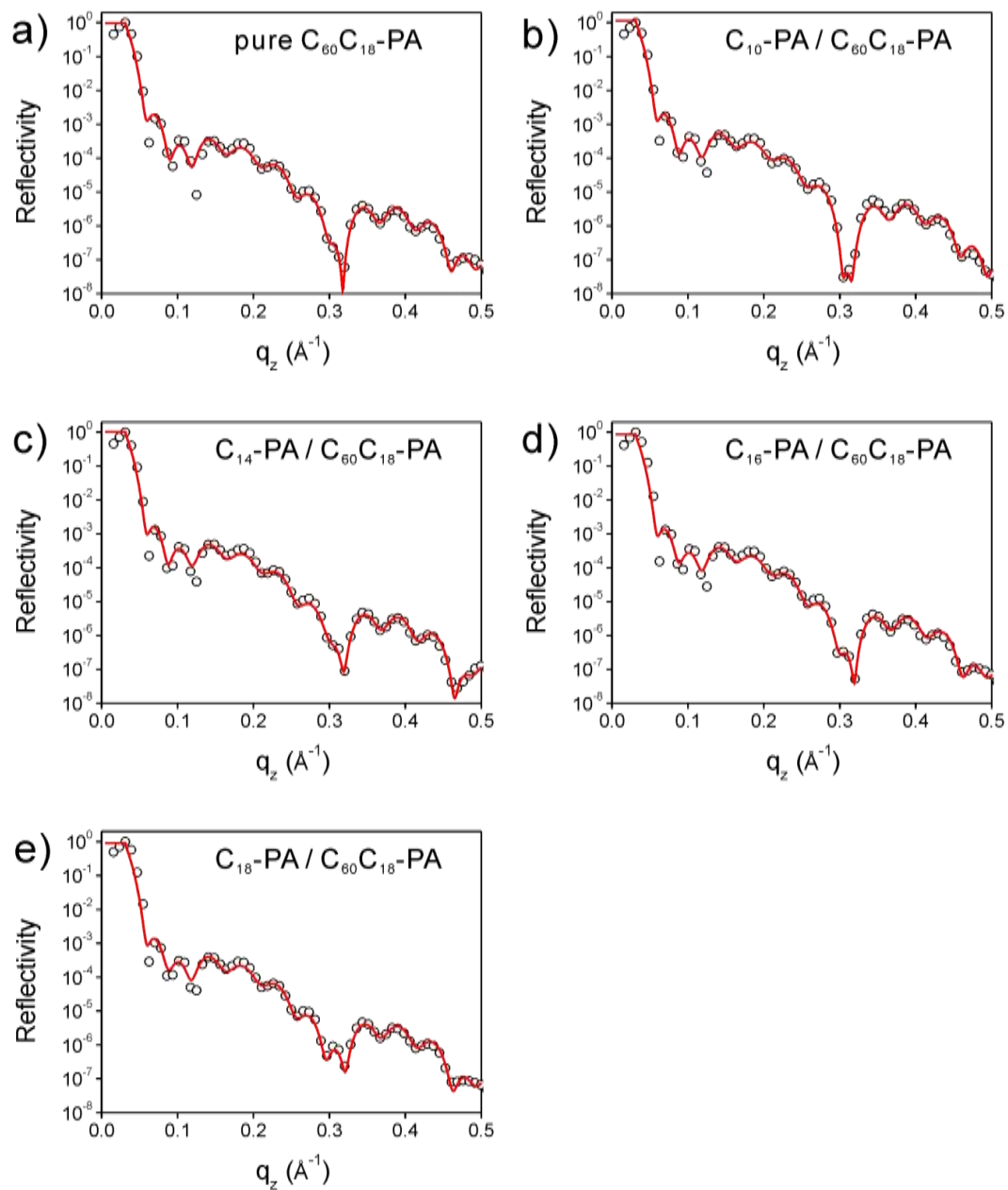


Figure S2: a) X-ray reflectivity data (circles) and corresponding fits (lines) for different SAM systems (pure $C_{60}C_{18}$ -PA SAM and mixed alkyl-PA/ $C_{60}C_{18}$ -PA SAMs; alkyl-PAs with chain length from C_{10} to C_{18}).

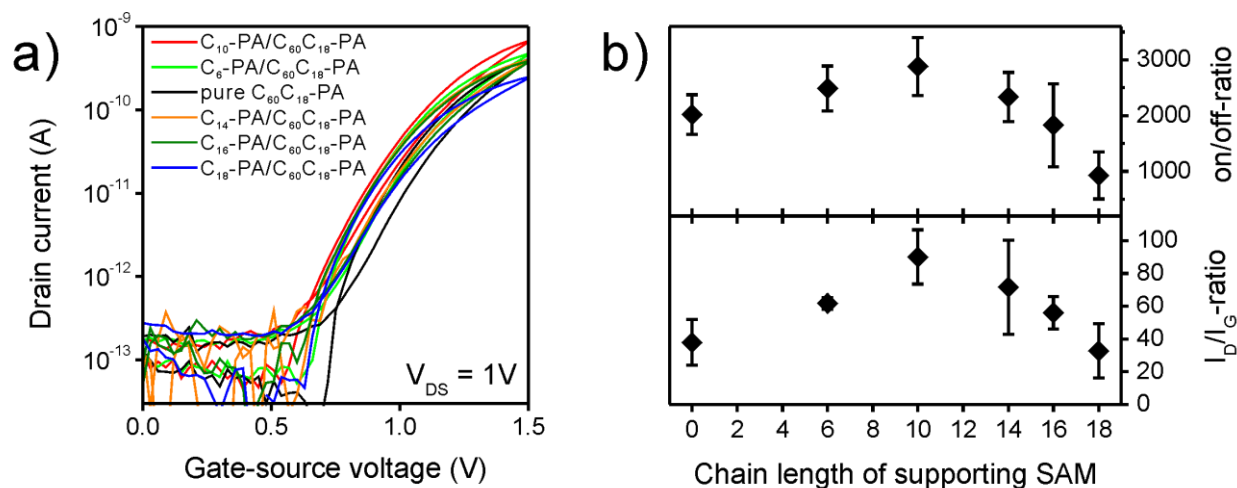


Figure S3: Electrical results of C_{60} -based SAMFETs: a) representative transfer curves of SAMFETs made of pure $C_{60}C_{18}$ -PA, mixed C_6 -PA/ $C_{60}C_{18}$ -PA, C_{10} -PA/ $C_{60}C_{18}$ -PA, C_{14} -PA/ $C_{60}C_{18}$ -PA, C_{16} -PA/ $C_{60}C_{18}$ -PA and C_{18} -PA/ $C_{60}C_{18}$ -PA, respectively. b) Average on/off-ratios and drain current to gate current ratios (I_D/I_G) of all mixed alkyl-PA/ $C_{60}C_{18}$ -PA SAM systems (x-axis shows chain length of the alkyl-PA) and pure $C_{60}C_{18}$ -PA devices (x-axis value of zero).

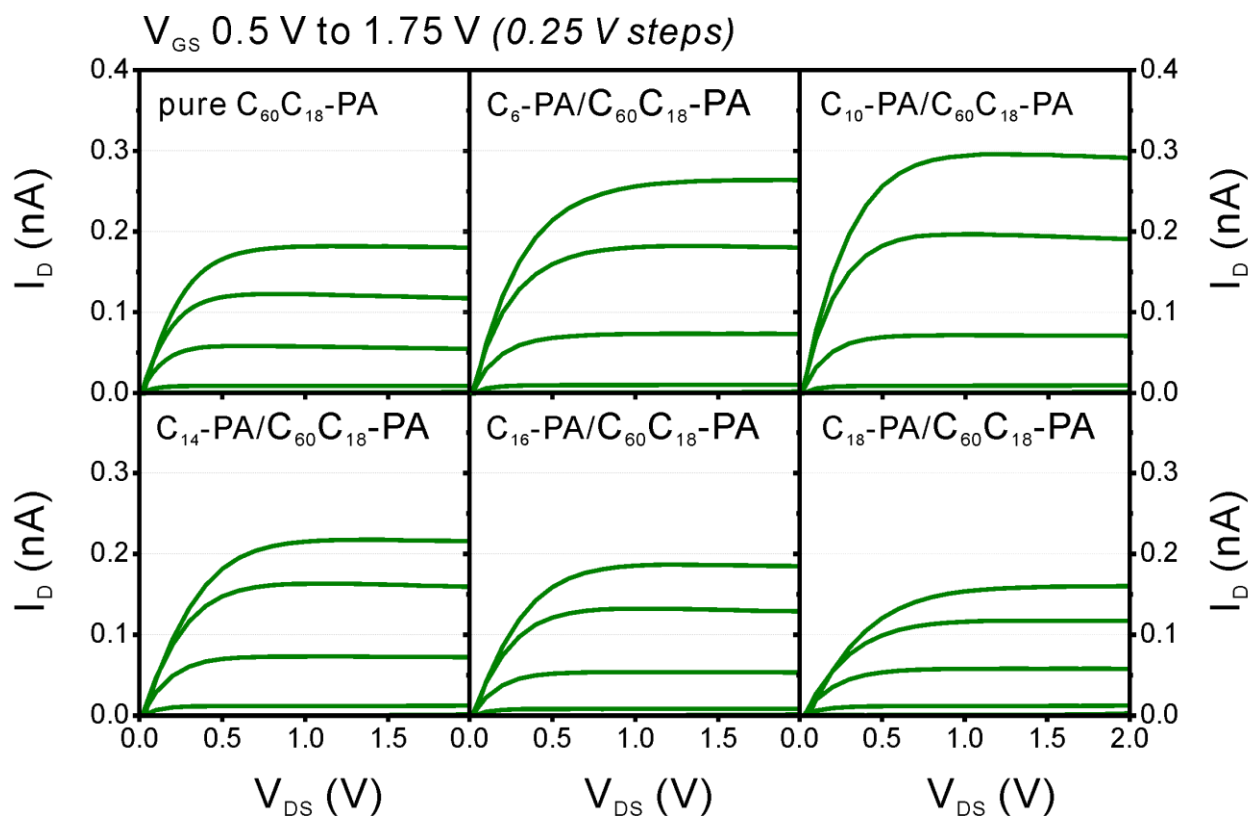


Figure S4: Representative output curves of SAMFET devices made of pure $C_{60}C_{18}$ -PA and different mixed alkyl-PA/ $C_{60}C_{18}$ -PA SAMs. The output curves indicated good ohmic contacts between the gold source/drain electrodes and the C_{60} monolayer semiconductor. Increased charge transport in the mixed SAMs with medium chain lengths can be observed, compared to the pure $C_{60}C_{18}$ -PA devices and mixed SAMs with long alkyl-PAs.