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Organic photodetectors based on pentacene single crystals with fast response and flexibility

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S1. AFM image of pentacene single crystal

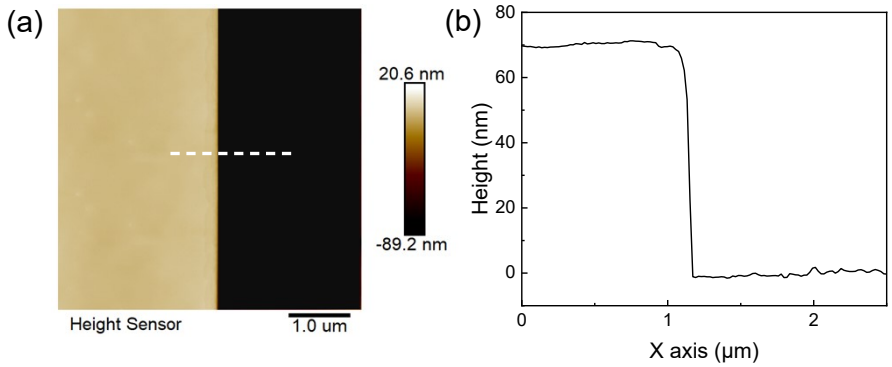

Fig. S1 (a) AFM image of pentacene single crystal grown directly on the SiO_2/Si substrate. (b) Height of sample, along the white dash lines in panel **a.**

S2. The thickness of PMMA

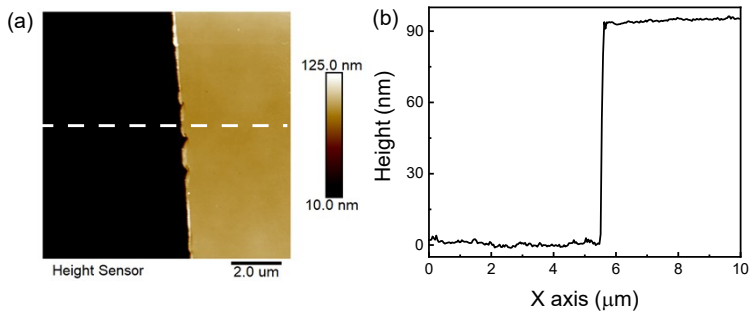

Fig. S2 (a) AFM image of PMMA on SiO_2/Si substrate. (b) Height of PMMA, along the white dash lines in panel **a.**

S3. Height of pentacene single crystal

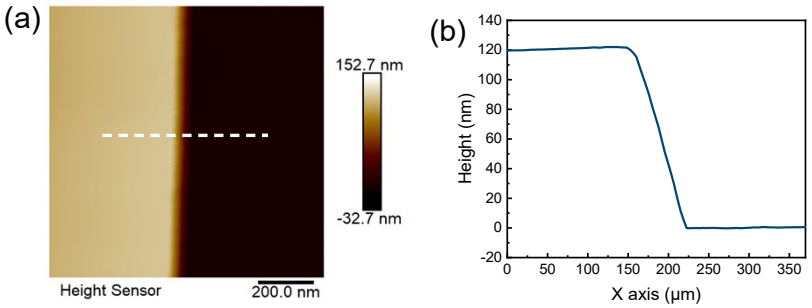

Fig. S3 (a) AFM image of the sample. (b) The height, along the white dash lines in panel **a**.

S4. The unit capacitance of PMMA

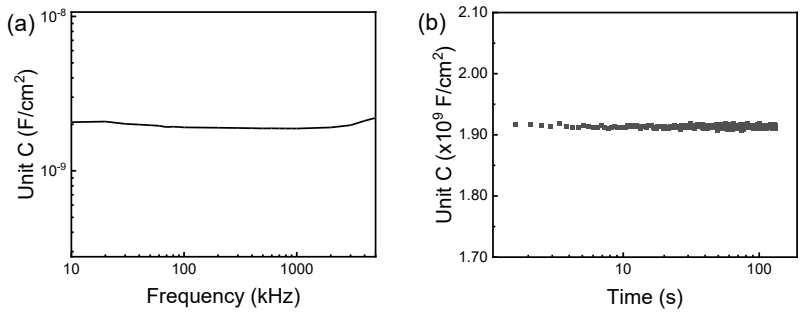

Fig. S4 (a) The frequency-capacitance of PMMA using the parallel-plat mode. (b) The unit capacitance of PMMA under 100 kHz.

S5. The responsivity of device on SiO_2 substrate

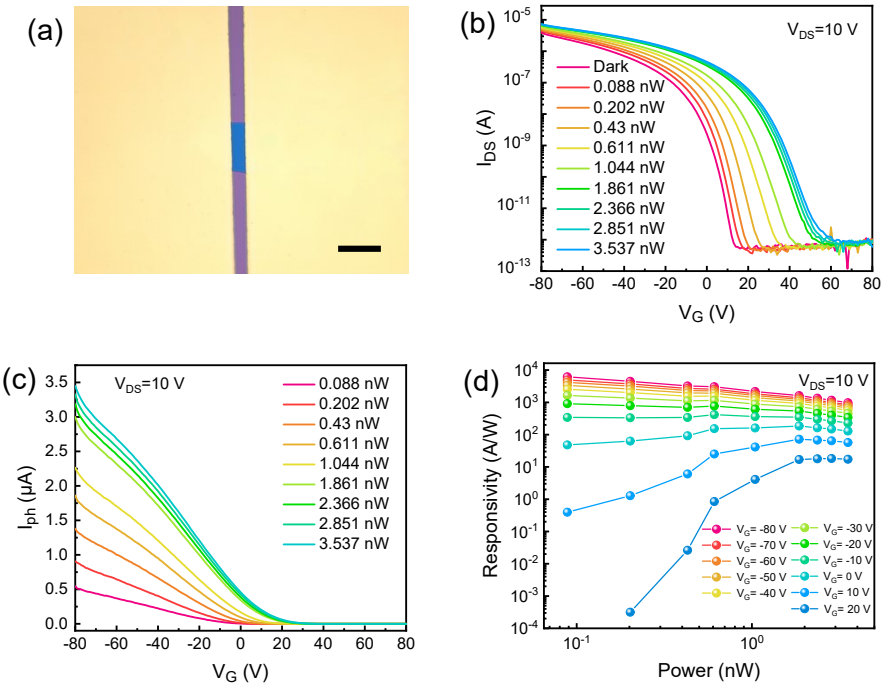

Fig. S5 (a) Optical microscopy image of the device. (b) Transfer curves of the device in dark and light conditions (658 nm laser), at V_{DS}=10 V. (c) Photocurrent as a function of the light powers. (d) Dependence of the responsivity on the illumination power at different gate bias.

S6: **Noise spectral density under different source-drain bias.**

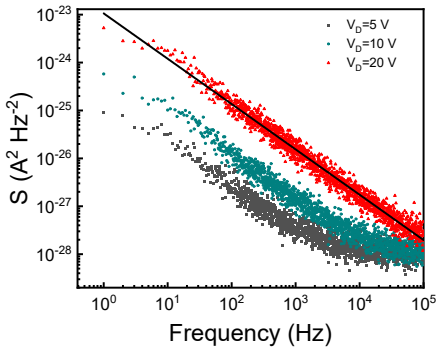

Fig. S6 Noise spectral density of the device on PET substrate under different bias voltage.