

## **Fast Patterning of Oriented Organic Microstripes for Field-effect**

### **Ammonia Gas Sensors**

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S1.

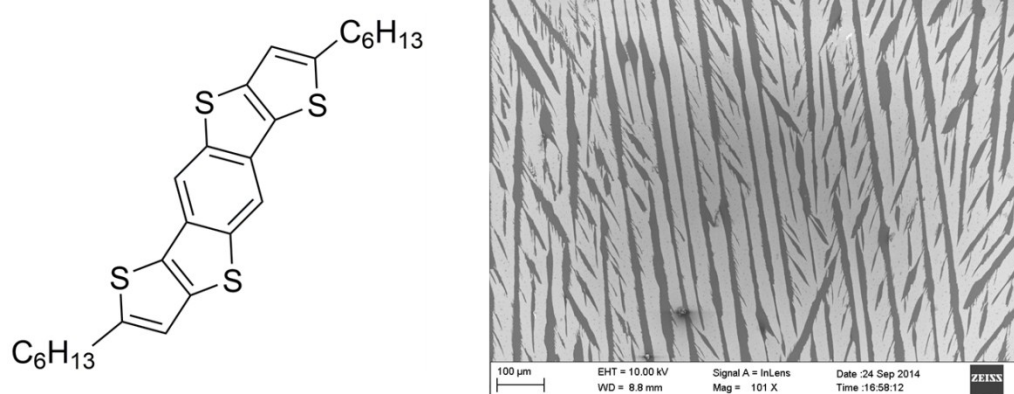


Fig. S1 Molecular structure of DTBDT-C6 molecule and SEM image of DTBDT-C6 microstripes dip-coated on bare SiO<sub>2</sub>/Si substrate and evaporated in toluene,

S2.

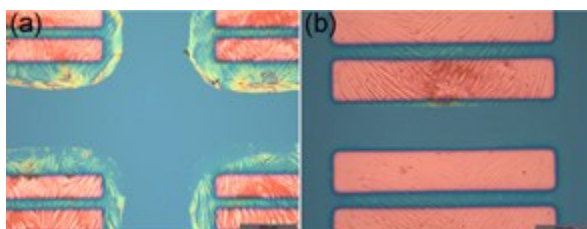


Fig. S2 The area-selective behavior of DTBDT-C6 on hydrophobic surfaces with different geometry of the gold electrodes. The treatment time with OTS is 6 h, pulling direction is upwards, lifting rate is 2000 μm/s and scale bar is 500 μm.

S3.

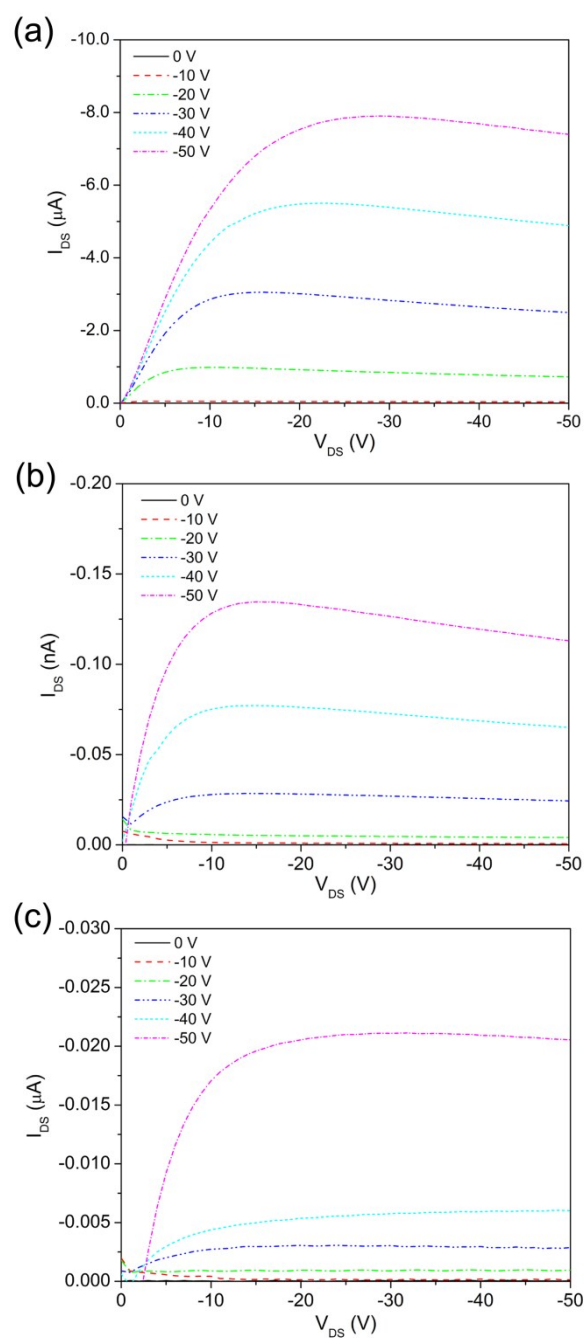


Fig. S3. Output characteristics of top-contact OFETs with DTBBDT-C6 microstripes grown on (a) Si/SiO<sub>2</sub> substrate, Output characteristics of bottom-contact OFETs with DTBBDT-C6 microstripes grown on (b) Si/SiO<sub>2</sub> substrate treated with OTS for 6 h and evaporated in the toluene vapor atmosphere slowly, (c) Si/SiO<sub>2</sub> substrate treated with OTS for 6 h and evaporated fast in air. The channel length is 50  $\mu\text{m}$ .

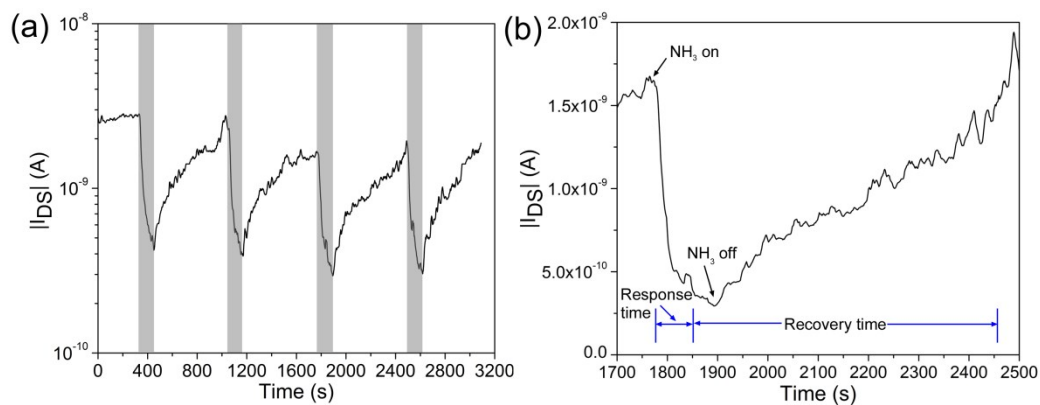


Fig. S4 (a) Sensing curve, i.e., plot of absolute source-drain current versus time with exposure to  $\text{NH}_3/\text{N}_2$  mixed gas or pure  $\text{N}_2$ .  $V_{GS}$  and  $V_{DS}$  are fixed at  $-40$  V. The grey bars indicate the exposure of 50 ppm  $\text{NH}_3/\text{N}_2$  mixed gas. (b) Enlarged panel in (a), showing the detailed shape of sensing curves and definition of response/recovery time.

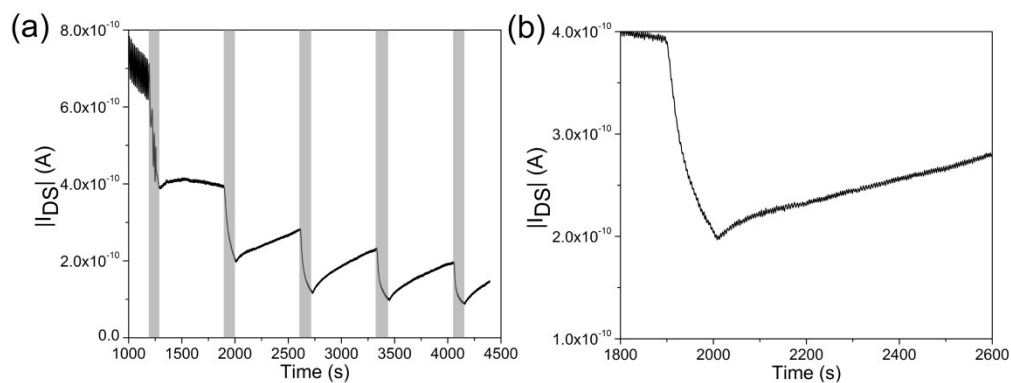


Fig. S5 Plot of absolute source-drain current versus time with exposure to  $\text{NH}_3/\text{N}_2$  mixed gas or pure  $\text{N}_2$  for patterned OFETs with microstripes evaporated in toluene vapor.  $V_{GS}$  and  $V_{DS}$  are fixed at  $-40$  V. The grey bars indicate the exposure of 50 ppm  $\text{NH}_3/\text{N}_2$  mixed gas.

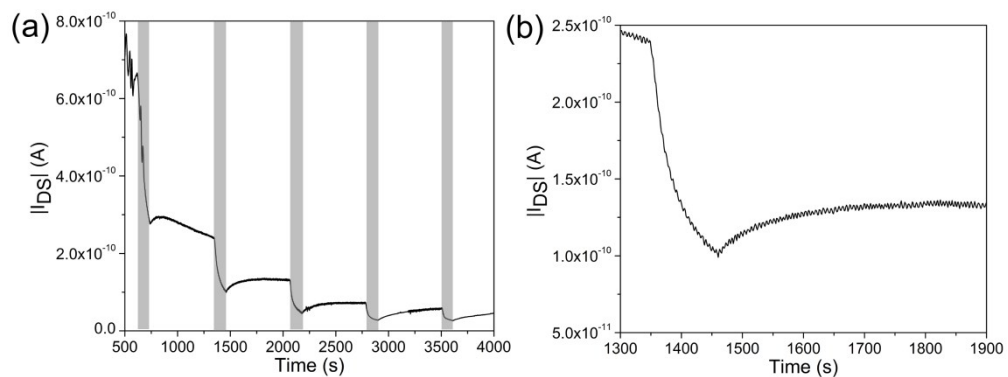


Fig. S6 Plot of absolute source-drain current versus time with exposure to  $\text{NH}_3/\text{N}_2$  mixed gas or pure  $\text{N}_2$  for patterned OFETs with microstripes evaporated in air.  $V_{GS}$  and  $V_{DS}$  are fixed at -40 V. The grey bars indicate the exposure of 50 ppm  $\text{NH}_3/\text{N}_2$  mixed gas.