Supplementary Information

Hybrid Poly(3-hexyl thiophene):\(\text{TiO}_2\) Nanorods Oxygen Sensor

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The response time and recovery time of the oxygen sensor

Herein we used exponential curve to accurately fit the experiment data of Fig. 7 (b) (60°C) and estimate the response time and recovery time of our sensors according to the definitions:

**Response time:** The response time is defined as the time our sensor takes to reach 90% of saturated $R_0/R$ (steady-state gain value) after the exposure to oxygen gas.

**Recovery time:** The recovery time is defined as the time our sensor takes to reach 20% of the initial $R_0/R$ values (before exposure to oxygen gas).

![Figure S1](image1)

**Fig. S1.** Sensing responses of P3HT/TiO$_2$ hybrid film (50wt% TiO$_2$) testing at 60°C.

![Figure S2](image2)

**Fig. S2.** Sensing recovery of P3HT/TiO$_2$ hybrid film (50wt% TiO$_2$) testing at 60°C.
Fig. S1 and S2 present the sensing responses and recovery of P3HT/TiO$_2$ hybrid film (50wt% TiO$_2$) testing at 60°C. The red lines represent the exponential fitting results. According to the formula and the definitions, the response and recovery time can be estimated to be 4.1 and 2.3 minutes respectively.