Electronic Supplementary Material (ESI) for Nanoscale.

Supporting information

Exciton-dipole coupling in two-dimensional rubrene assembly sensors

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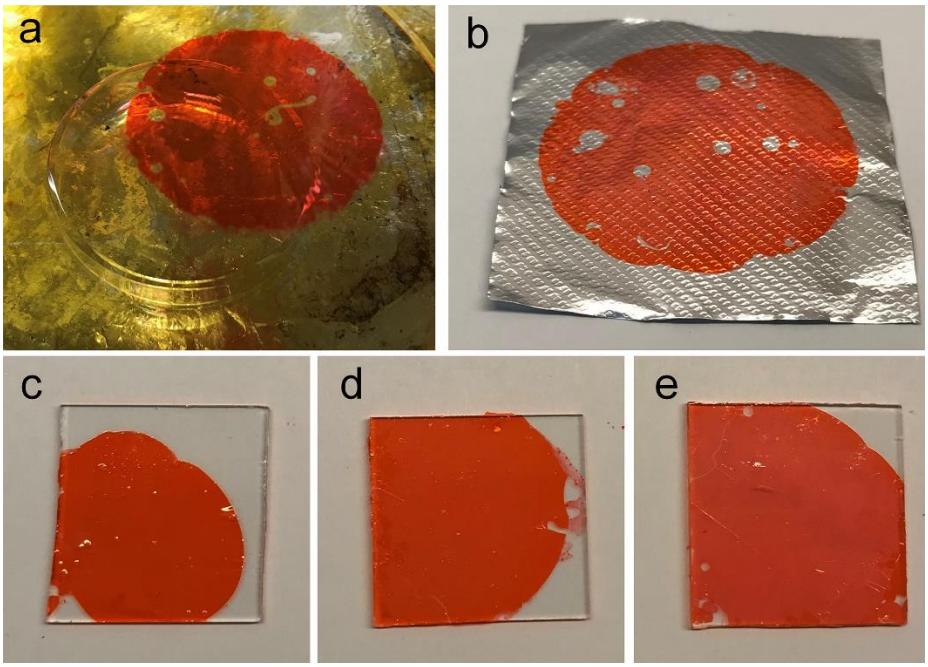

Figure S1. The freestanding rubrene film with different thickness on the water surface.

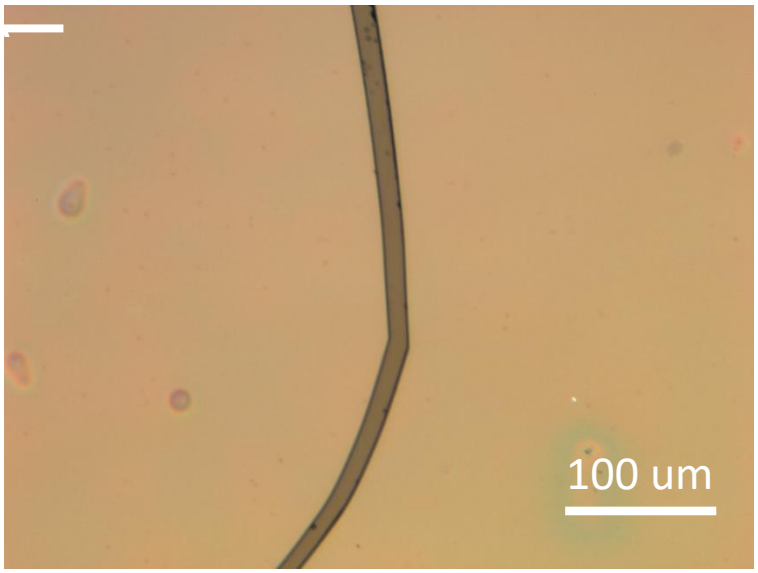

Figure S2. The optical image of the rubrene nanosheet.

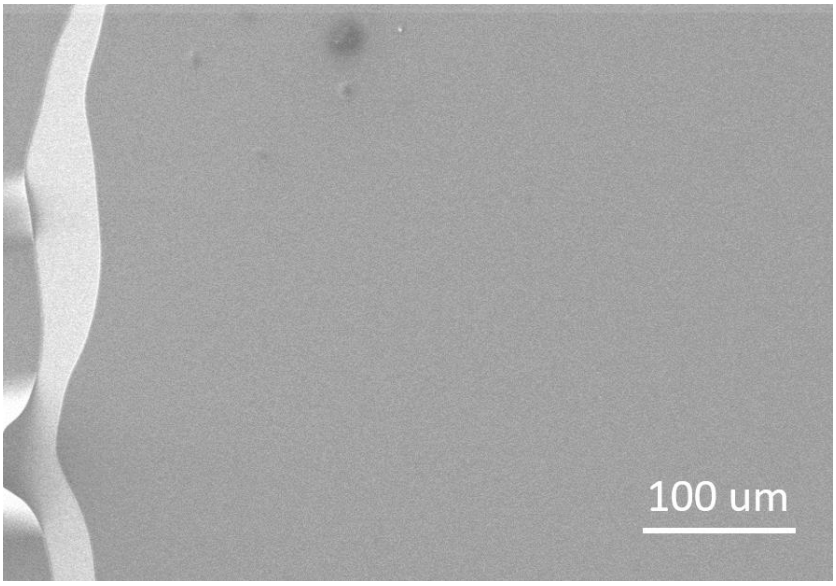

Figure S3. The SEM image of the rubrene nanosheet.

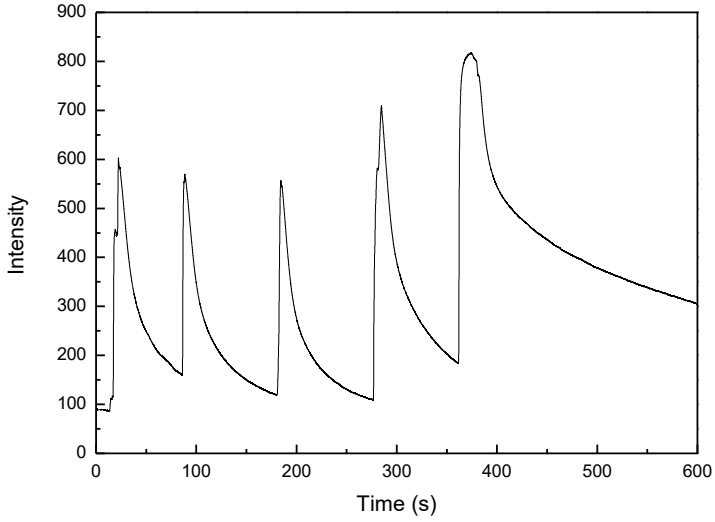

Figure S4. The performance of the commercial sensor for detecting acetone.

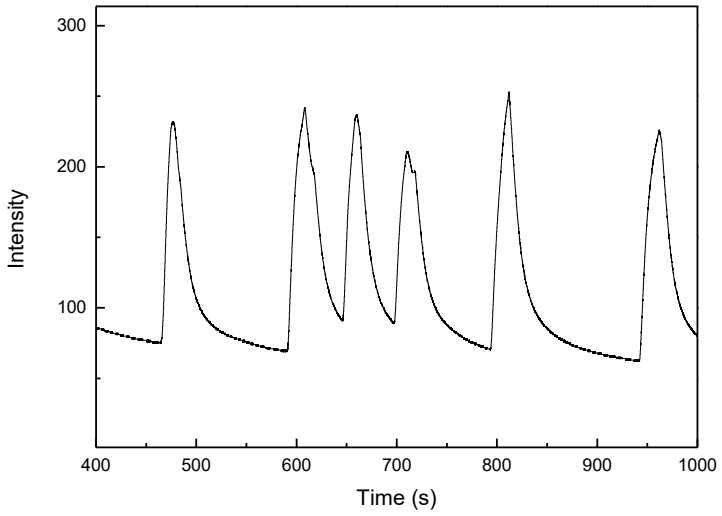

Figure S5. The performance of the commercial sensor for detecting toluene.

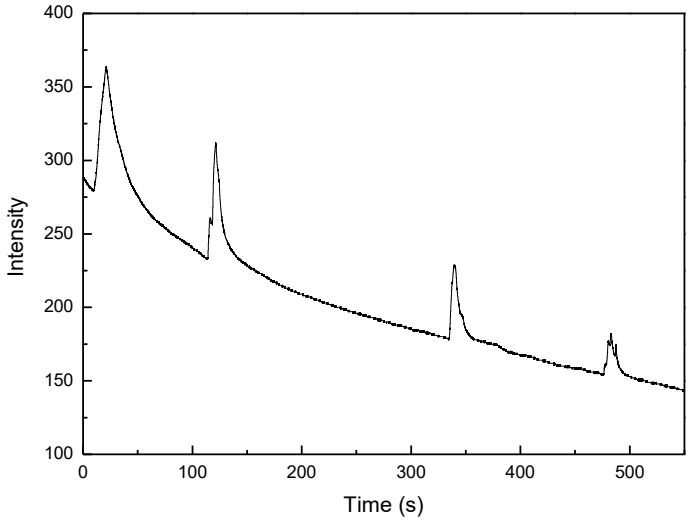

Figure S6. The performance of the commercial sensor for detecting IPA.

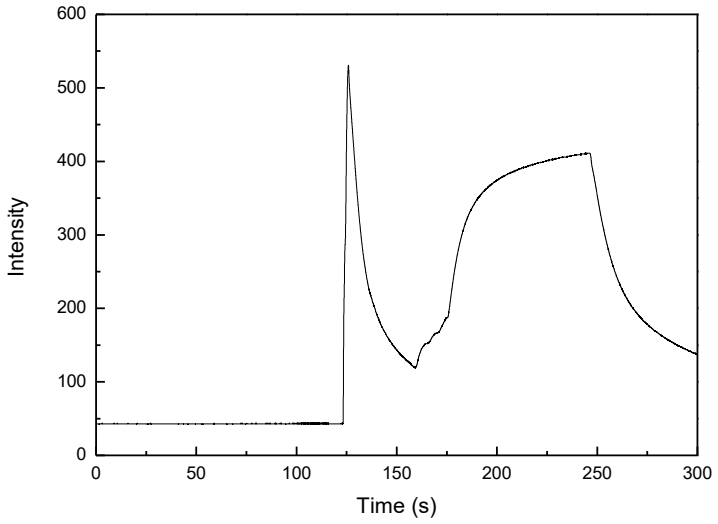

Figure S7. The performance of the commercial sensor for detecting DCB.

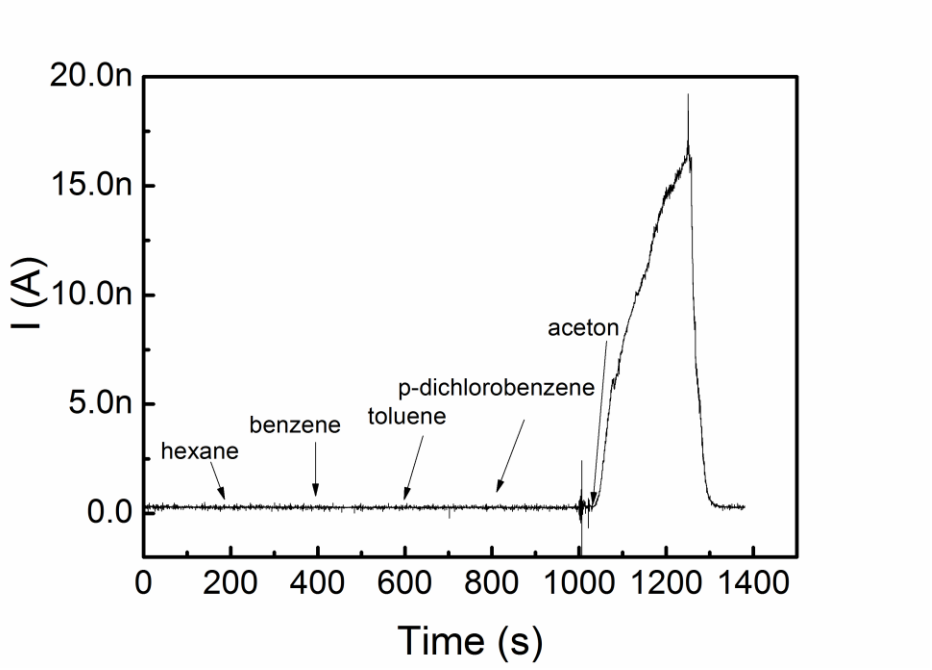

Figure S8. The current change of the rubrene sensor when exposed to hexane, benzene, toluene, p-dichlorobenzene and aceton.

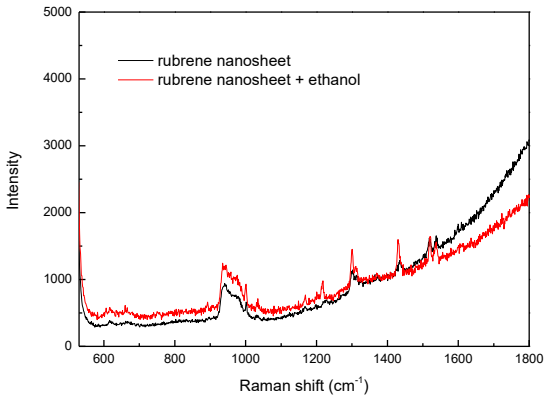

Figure S9. The Raman spectra of rubrene nanosheet before and after ethanol adsorption.

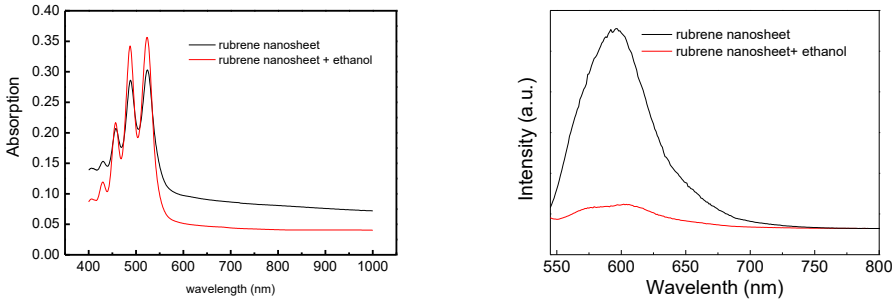

Figure S10. The absoprtion and emission spectra of the rubrene nanosheet before and after ethanol adsorption.

The sensor response follows a good linear trend over a wide range of ethanol level, as shown in Figure 3f. The linear fit equation is illustrated as

$$\lg(y)=23.6+0.255\lg(x)$$

x, y refer to the concentration of the ethanol gas and the sensitivity of rubrene ECN sensor, defining as I_g/I_a.