

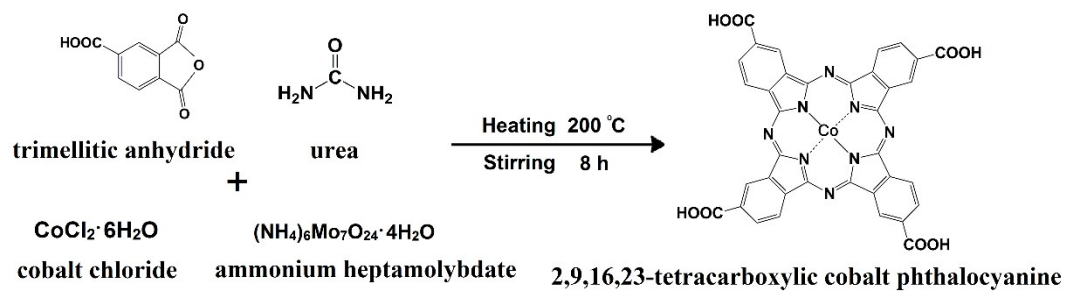
**Supporting information**

**Enhancing room-temperature NO<sub>2</sub> detection of cobalt  
phthalocyanine based gas sensor at an ultralow laser exposure**

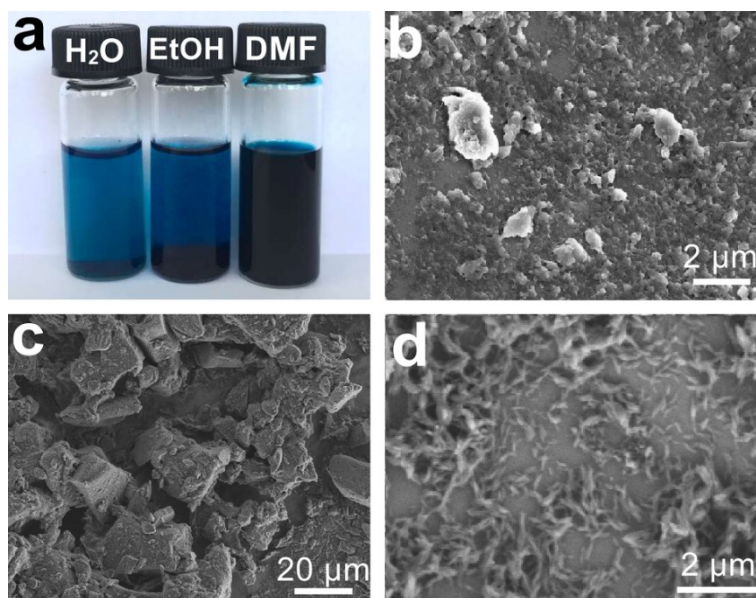
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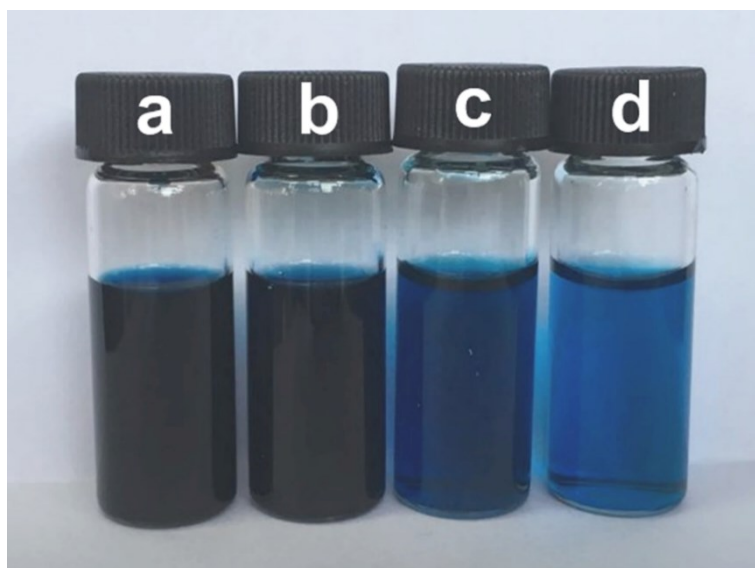
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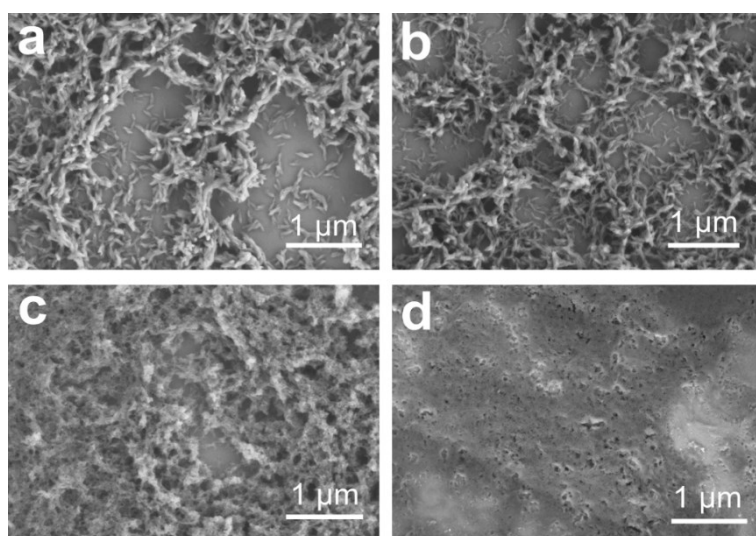
**Figure S1.** The synthesis route for 2,9,16,23-tetracarboxylic cobalt phthalocyanine (CoPc–COOH).



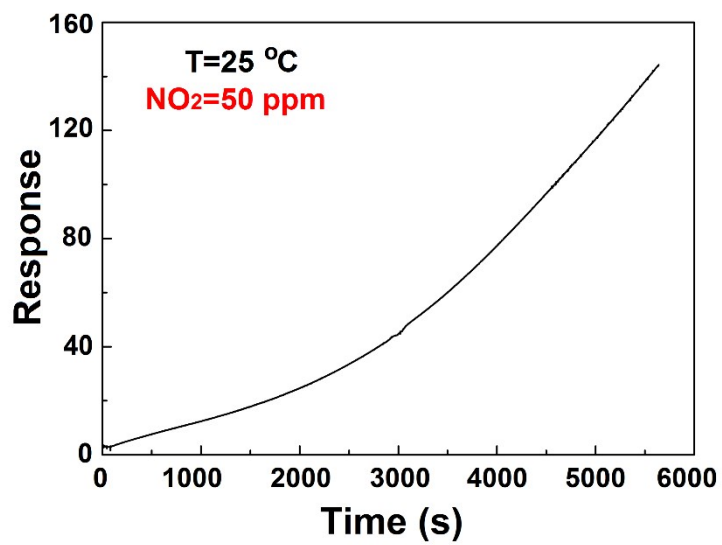
**Figure S2.** (a) The photographs of CoPc-COOH in different solutions. SEM images of the crystalline morphologies of CoPc-COOH in (b) aqueous solution, (c) ethanol solution, and (d) DMF solution.



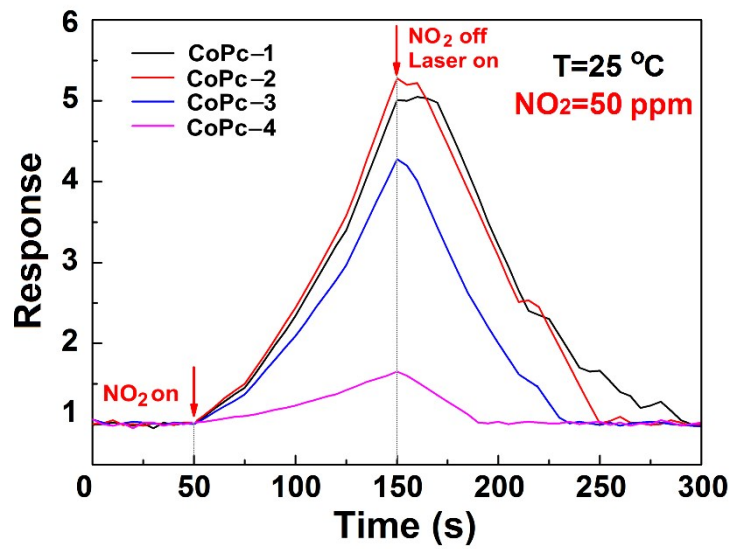
**Figure S3.** The photographs of CoPc-COOH in different concentrations of (a) CoPc-1, (b) CoPc-2, (c) CoPc-3 and (d) CoPc-4.



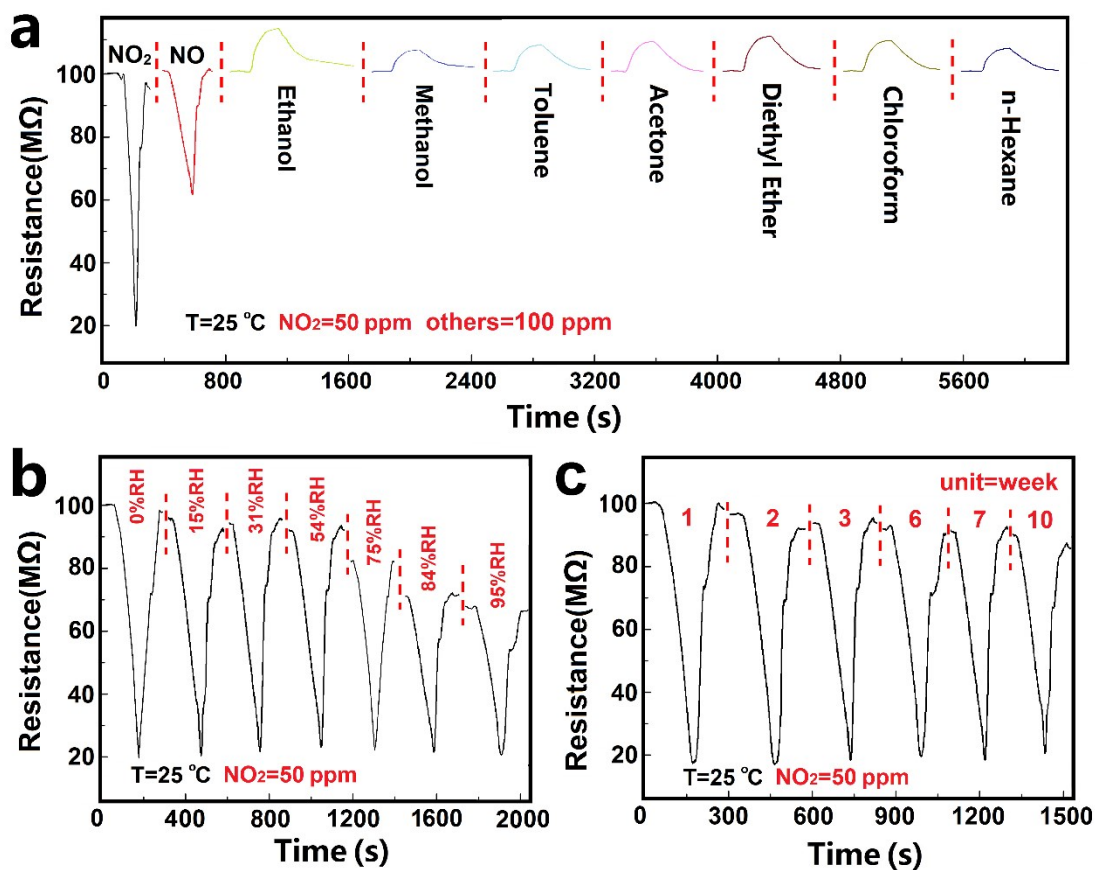
**Figure S4.** SEM images of the crystalline morphologies of (a) CoPc-1, (b) CoPc-2, (c) CoPc-3 and (d) CoPc-4.



**Figure S5.** The response curve of CoPc-2 to 50 ppm NO<sub>2</sub> gas for more than 5500 s.



**Figure S6.** The comparison of single response curves of CoPc-1, CoPc-2, CoPc-3 and CoPc-4 to 50 ppm NO<sub>2</sub> gas.



**Figure S7.** The real-time resistance response curves of (a) the selective test, (b) humidity test, and (c) long-term stability test.