Supplementary Information

Ultrathin ZIF-8 Film Containing Polyoxometalate as an Enhancer for Selective Formaldehyde Sensing

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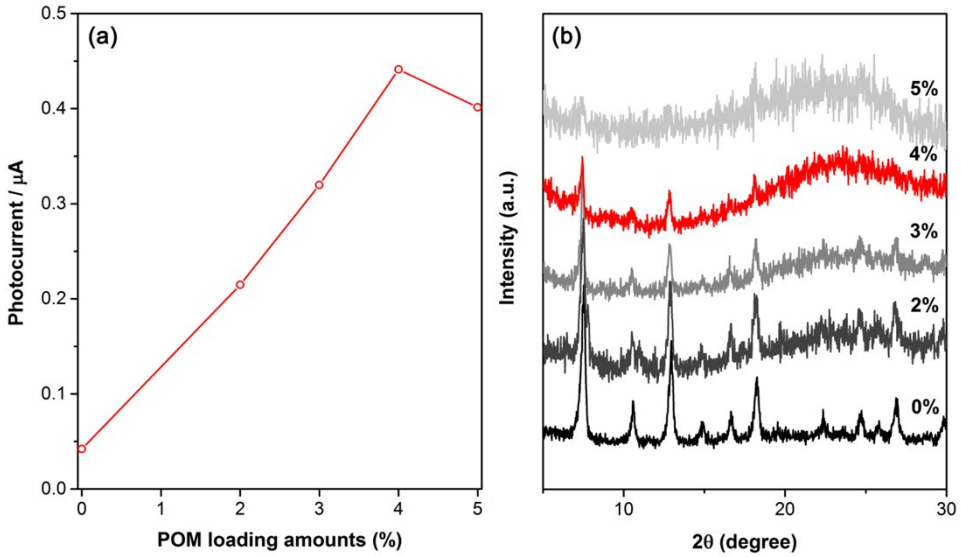

Fig. S1 (a) Photocurrent responses of POM@ZIF-8@ZnO samples (in 100 ppm HCHO at 25 °C) with different POM loading amounts, and (b) the corresponding X-ray diffraction patterns.

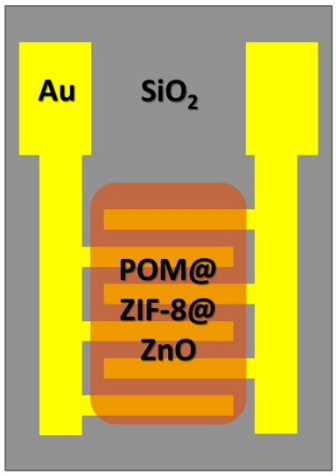

Fig. S2 Schematic presentation of an IDE sensor device.

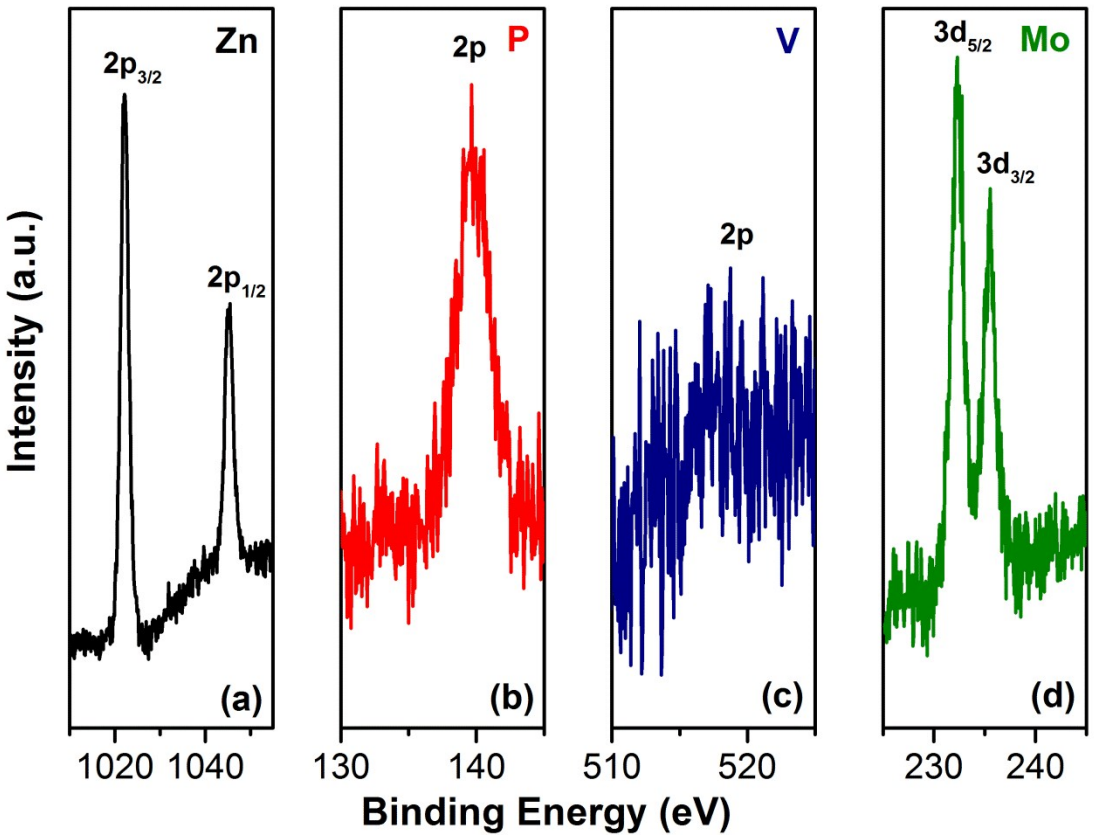

Fig. S3 High-resolution XPS spectra of (a) Zn 2p, (b) P 2p, (c) V 2p and (d) Mo 3d.

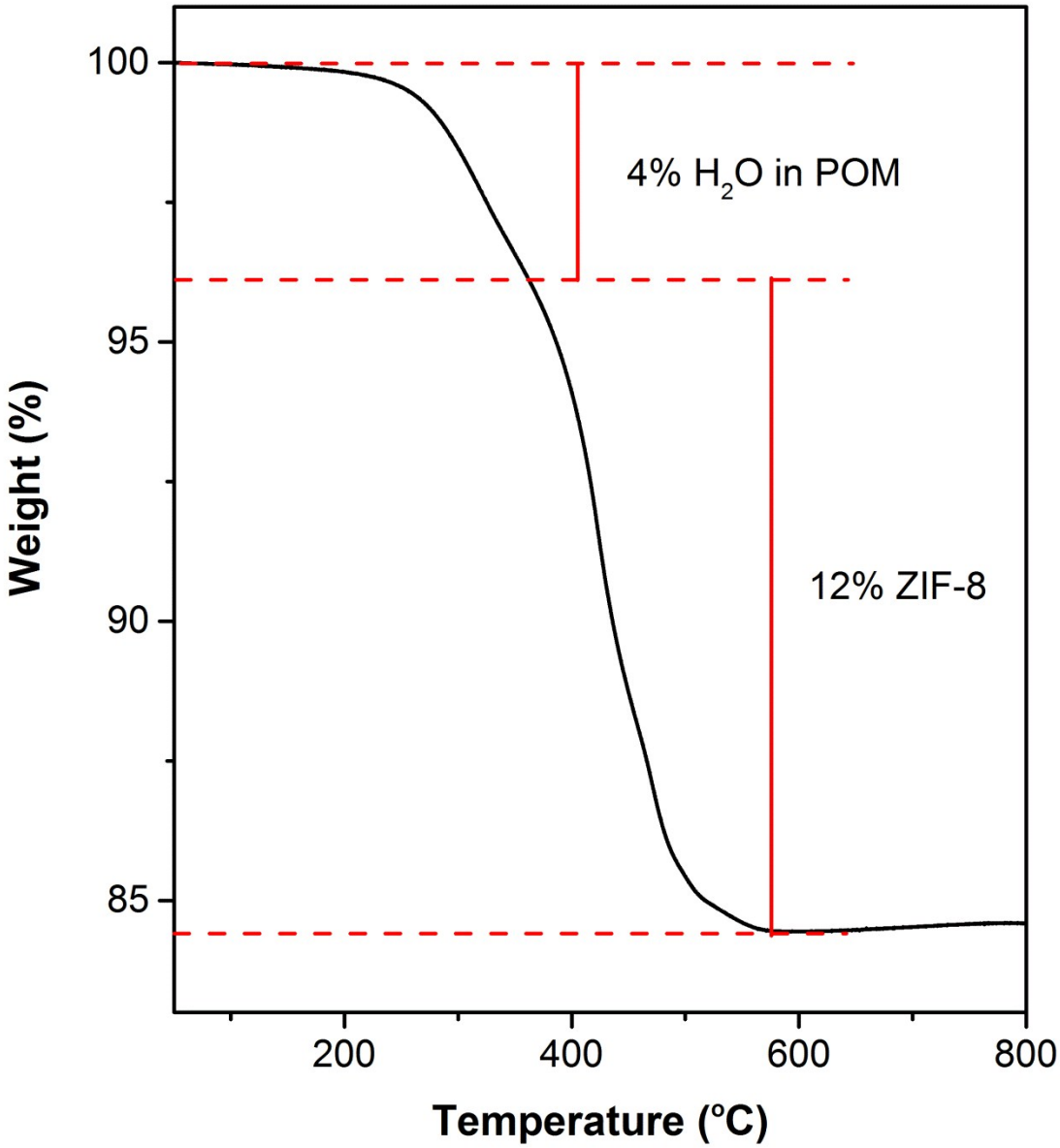

Fig. S4 Thermogravimetric curve of the POM@ZIF-8@ZnO material.

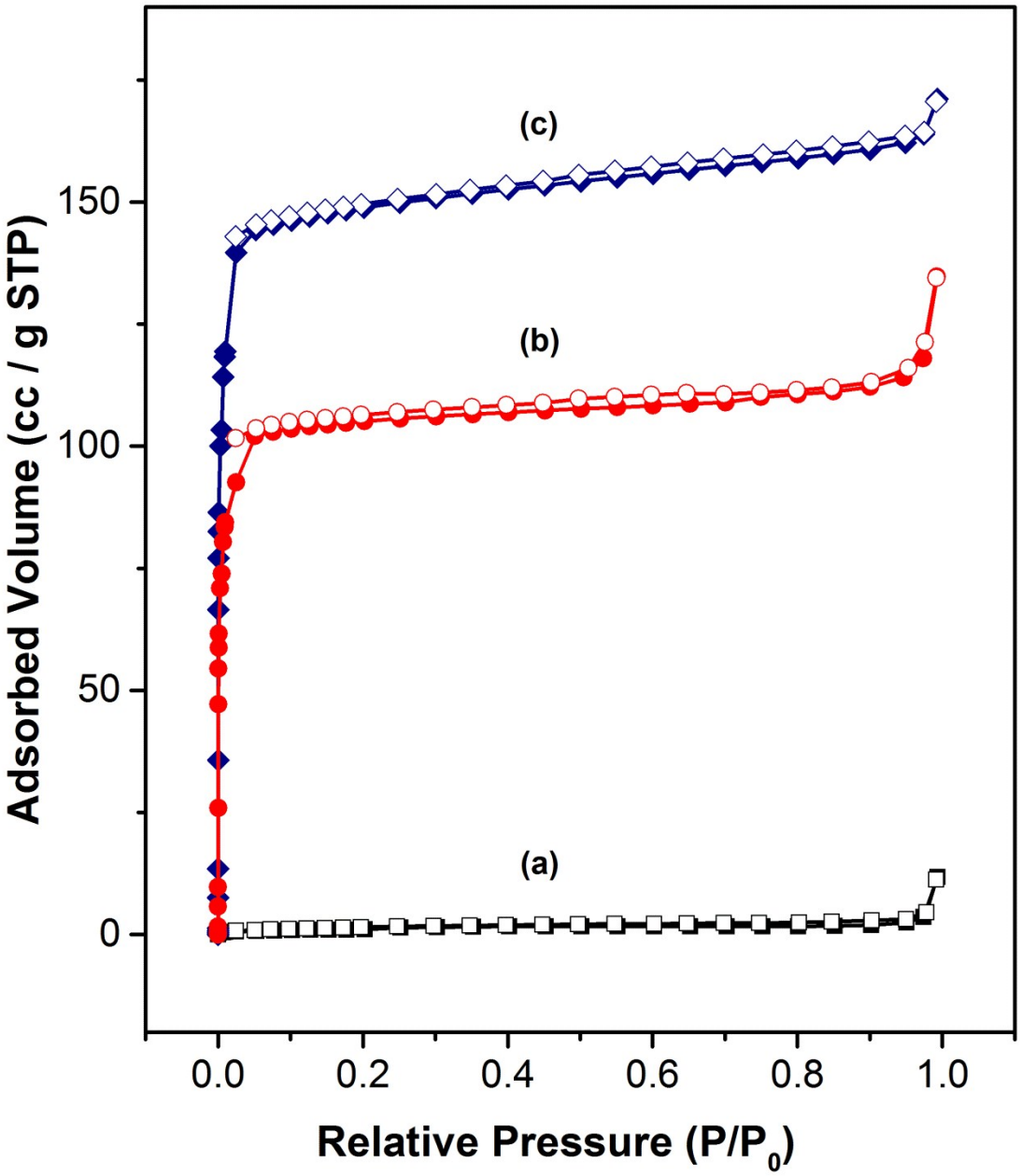

Fig. S5 Nitrogen sorption isotherms for (a) ZnO, (b) POM@ZIF-8@ZnO and (c) ZIF-8@ZnO measured at 77 K. Solid and open circles represent adsorption and desorption branches, respectively.

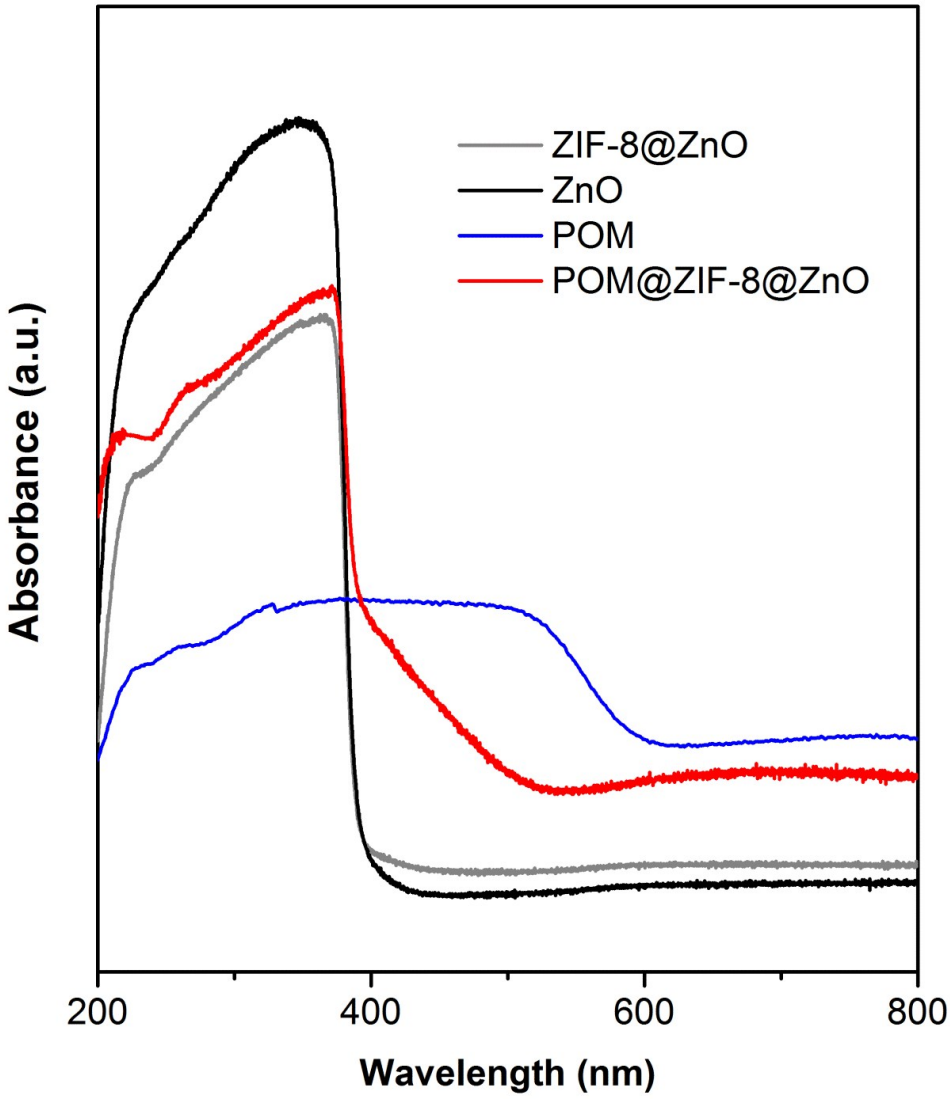

Fig. S6 UV-Vis diffuse reflectance spectra of ZnO (black), ZIF-8@ZnO (grey), $H_5PMo_{10}V_2O_{40}$ POM (blue) and POM@ZIF-8@ZnO (red).

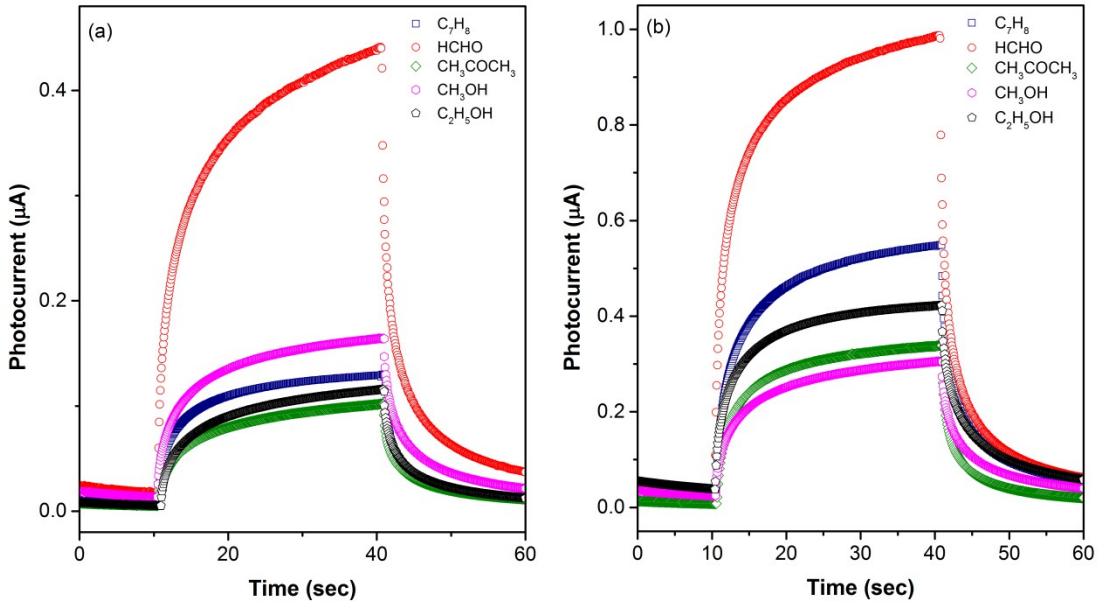

Fig. S7 Photocurrent curves of (a) POM@ZIF-8@ZnO material, and (b) POM/ZIF-8/ZnO physical mixture toward different VOCs with 100 ppm at 25 °C.

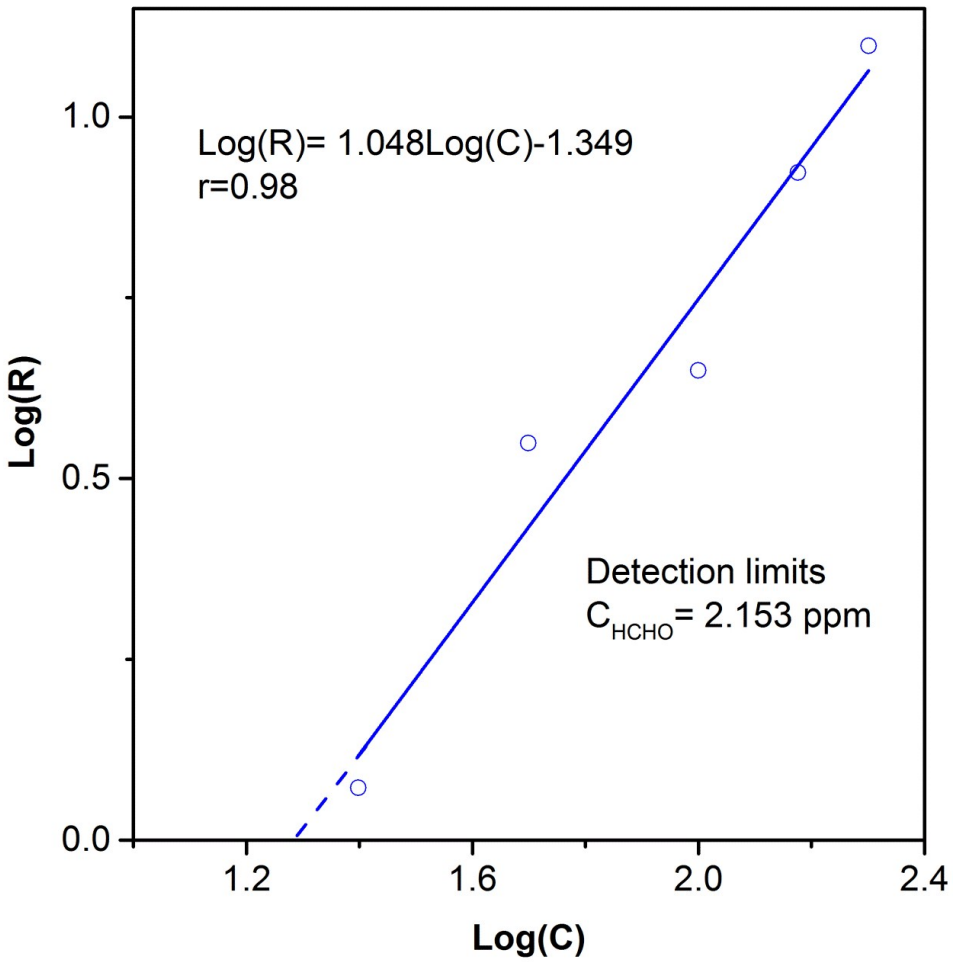

Fig. S8 The dilogarithm of gas response (R) and HCHO concentration (C) for POM/ZIF-8/ZnO.

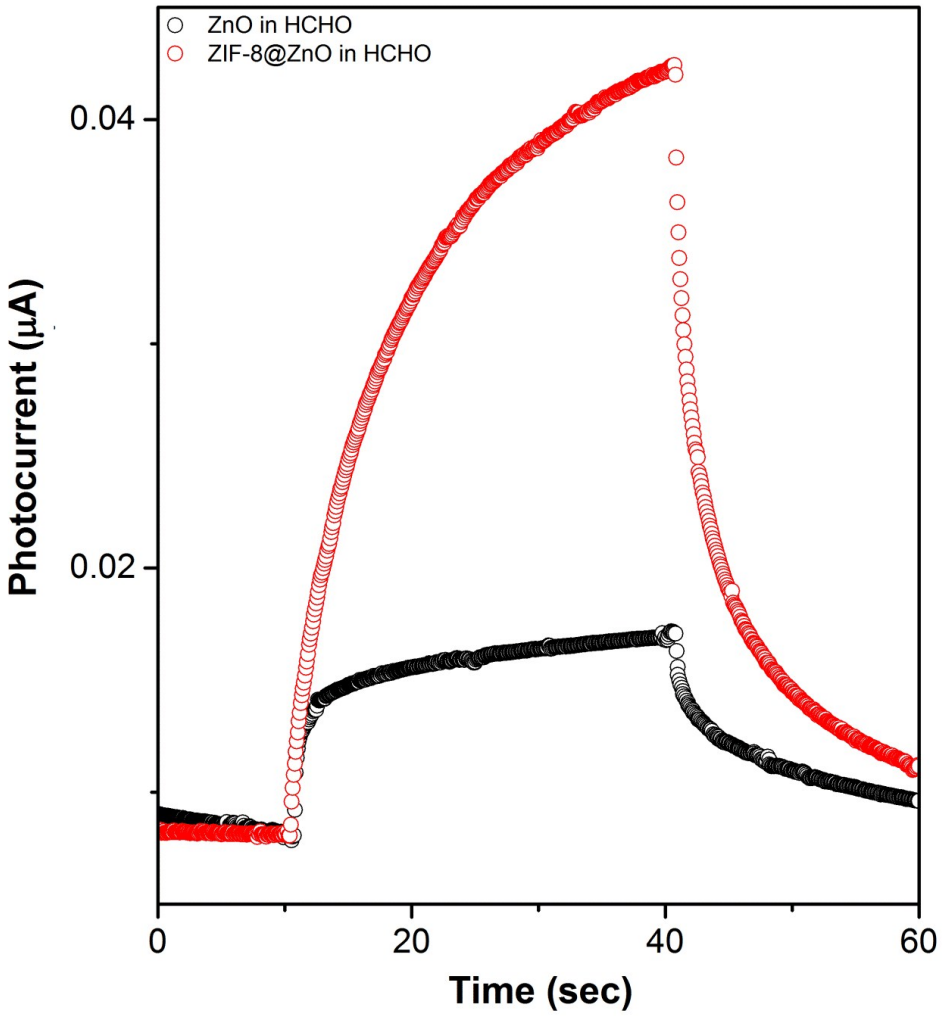

Fig. S9 Photocurrents of ZIF-8@ZnO and pristine ZnO in 100 ppm HCHO atmosphere at 25 °C.

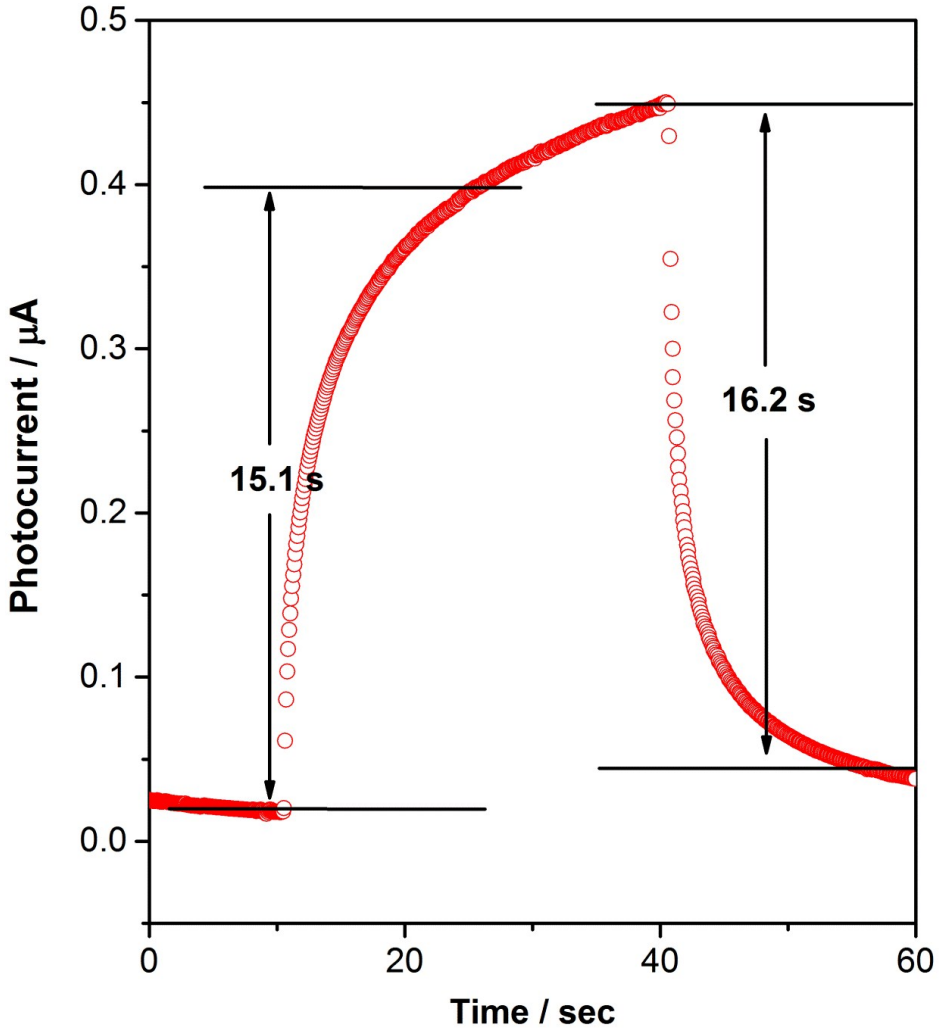

Fig. S10 Response and recovery times of POM@ZIF-8@ZnO in the presence of 100 ppm HCHO at 25 °C.