

Supporting Information for

Simultaneous Detection and Removal of Formaldehyde at Room Temperature: Janus Au@ZnO@ZIF-8 Nanoparticles

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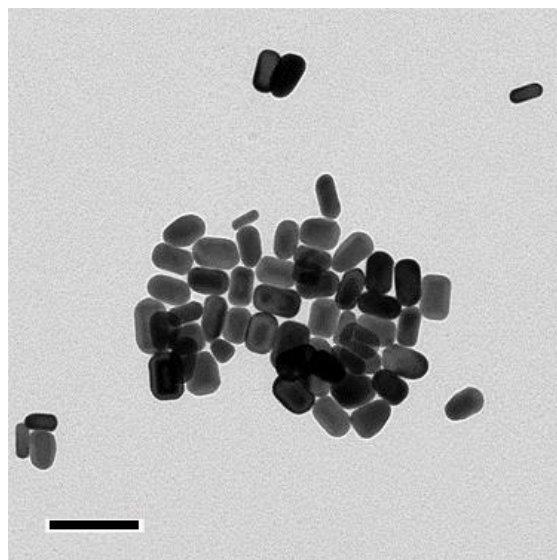


Fig. S1 TEM image of Au NRs. Scale bar represents 100 nm

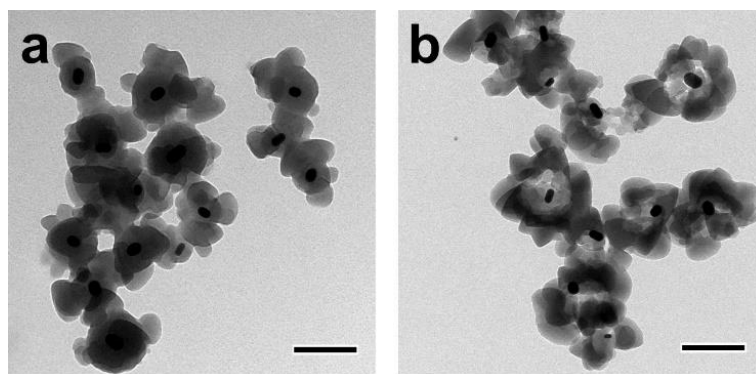


Fig. S2 TEM image of Au NRs@ZnO@ZIF-8 obtained by increasing the concentration of HMIM from 0.03 M (the samples shown in main text) to 0.3 M, at **a** 5 min and **b** 2 h. Scale bars in **a** and **b** represent 250 nm

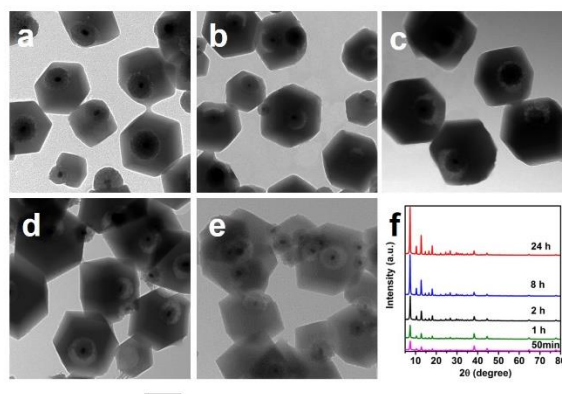


Fig. S3 TEM image of Au NRs@ZnO@ZIF-8 obtained at **a** 50 min, **b** 1 h, **c** 2 h, **d** 8 h, and **e** 24 h, **f** XRD patterns for these five stages. Scale bar represents 300 nm

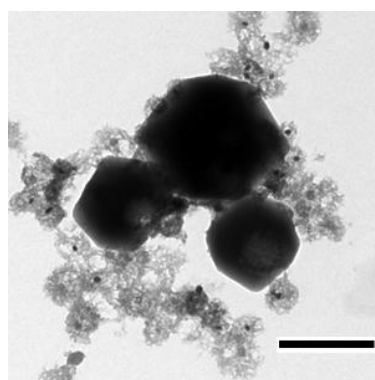


Fig. S4 TEM image of Au@ZnO@ZIF-8 obtained at 48 h; scale bar represents 400 nm. ZIF-8 which once coated on ZnO disappeared and transformed into larger crystals, which could be one of the most visual evidences for the Ostwald ripening during the ZIF-8 growth process, especially considering that the deprotonation rate is 0 at this stage (i.e., no more coordination between Zn^{2+} and HMIM)

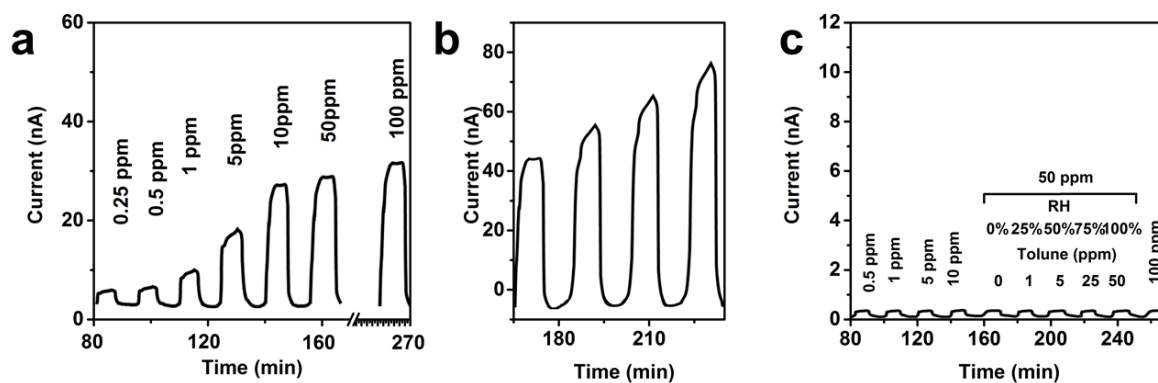


Fig. S5 Dynamic response-recovery of **a** Sample I to HCHO and **b** its selectivity performance to interferes (RH from 0 to 100%, toluene concentration from 1 to 50 ppm), **c** Sample III

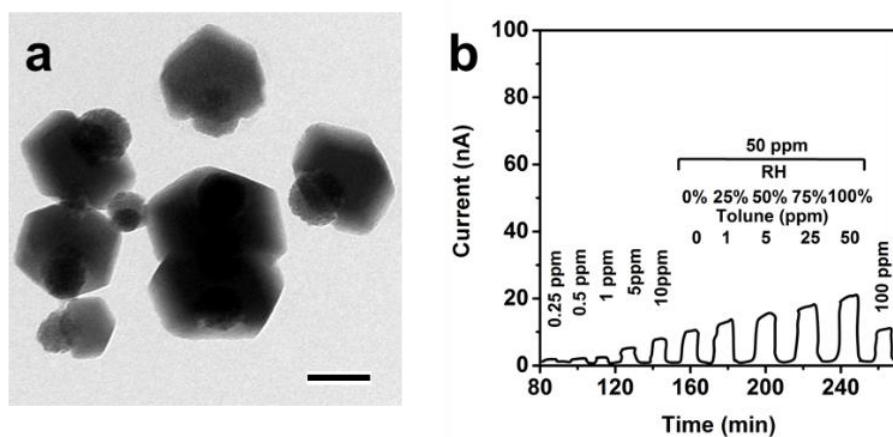


Fig. S6 a TEM image of ZnO@ZIF-8 (without Au NRs) which was synthesized under the same conditions with Sample II, and **b** its sensing performance to HCHO. Scale bar represents 200 nm.