Supporting information

Nanorod-constructed porous Co_3O_4 nanowires: Highly sensitive sensor for detection of hydrazine

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Fig. S1 shows the typical first and second CVs in 0.1 M NaOH with different hydrazine concentrations at 20 mV s^{-1}. When hydrazine was added to the electrolyte, the response current changed. It is observed that the anodic peak current increased with more concentrated hydrazine, especially for the CoOOH → CoO_2 process, while the cathodic current of CoO_2 → CoOOH decreased. This phenomenon is ascribed to the chemical reaction of hydrazine with CoO_2, which generates CoOOH (Co(III)) and N_2. Such process proves an Electrochemical–Chemical (EC) mechanism. The hydrazine detection by the Co_3O_4 NWs electrode can therefore be illustrated as shown in Fig. S2.

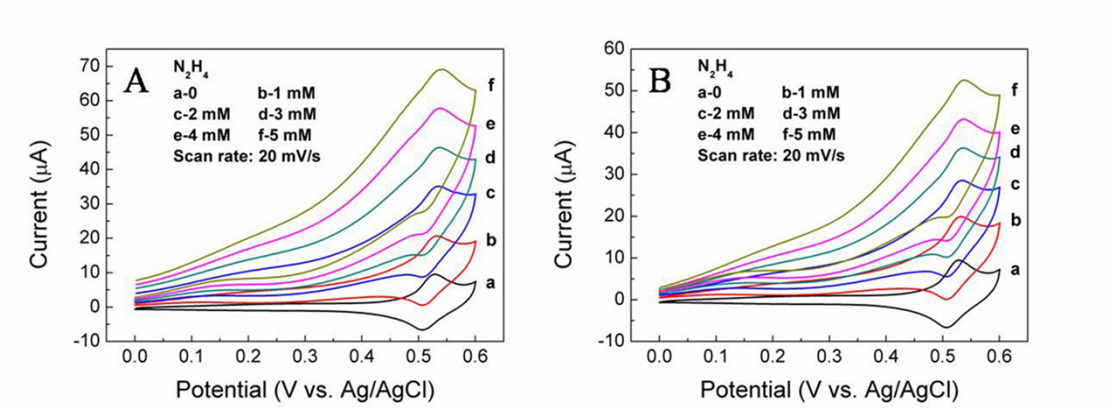

Fig. S1 The first (A) and second (B) CVs of Co_3O_4 NWs in 0.1 M NaOH with different hydrazine concentrations at 20 mV s^{-1}.

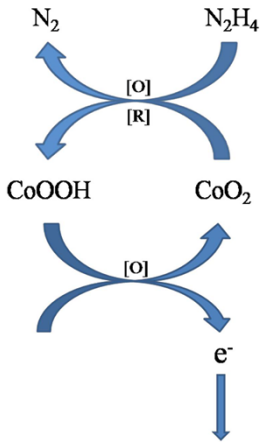

Fig. S2 The scheme of the principle of Co_3O_4 NWs for hydrazine detection

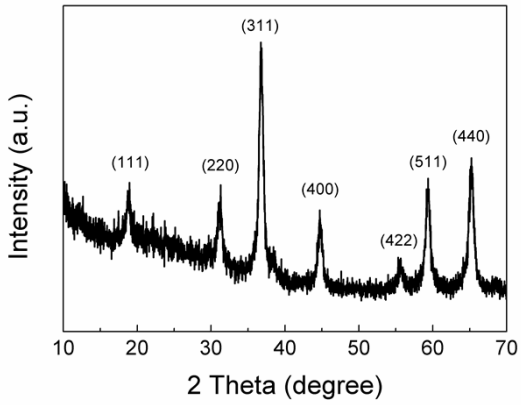

Fig. S3 XRD pattern of Co_3O_4 NPs

Fig. S3 shows the XRD pattern of Co_3O_4 NPs. All the diffractions of Co_3O_4 NPs correspond to the characteristics of standard Co_3O_4. The lattice fringe of 0.47 nm is assigned to the (111) plane of Co_3O_4 as shown in Fig. S4 which displays uniformly

dispersed nanoparticles of Co_3O_4 with the average particle size of ca. 6 nm.

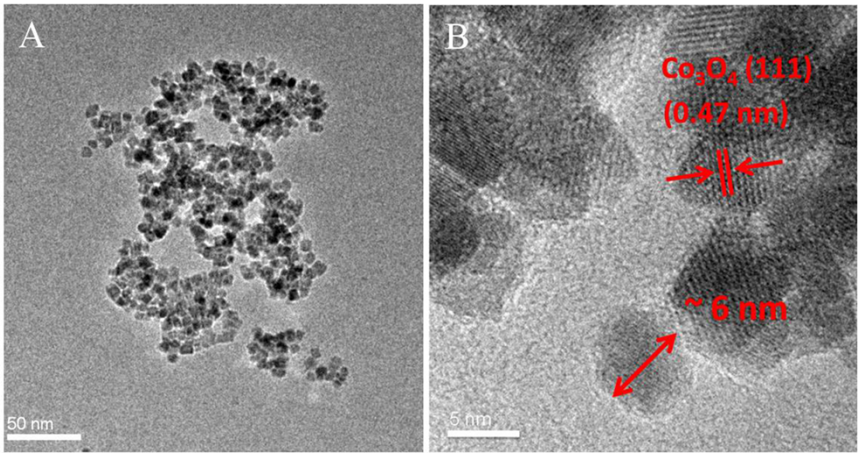

Fig. S4 TEM images of Co_3O_4 NPs (A, low magnification; B, high magnification)