

Electronic Supplementary Material (ESI) for RSC Advances

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## Supporting Information

In<sub>2</sub>O<sub>3</sub>-functionalized MoO<sub>3</sub> heterostructure nanobelts with  
improved gas-sensing performance

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NO<sub>2</sub> detection is very important in explosives detection due to it is a decomposition product of many explosive formulations and improvised explosive devices. To find the optimum detection temperature of the In<sub>2</sub>O<sub>3</sub>-functionalized MoO<sub>3</sub> heterostructure based sensor, we investigated the response to 10 ppm NO<sub>2</sub> at the operating temperature from 200 °C to 320 °C. As we can see in Fig. S1, with the increase of operating temperature, the response value of as-fabricated sensor is increasing till 280 °C, and then the response value become smaller. So we can infer that the optimum operating temperature of the sensors based on In<sub>2</sub>O<sub>3</sub>-functionalized MoO<sub>3</sub> heterostructure to NO<sub>2</sub> is 280 °C. The maximum response is about 21.8. Obviously, the as-obtained sample possesses high sensing properties to NO<sub>2</sub>.

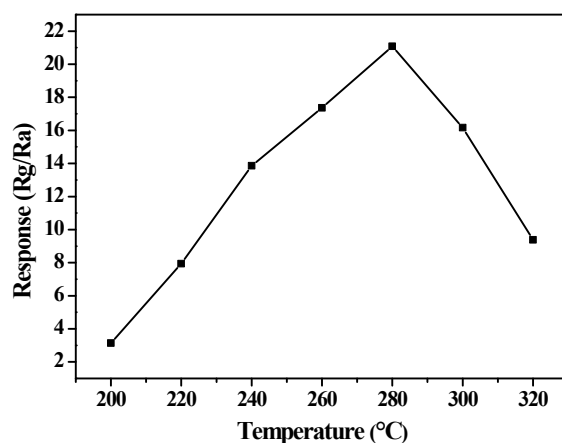


Fig. S1 Response of sensors based on In<sub>2</sub>O<sub>3</sub>-functionalized MoO<sub>3</sub> heterostructure to 10 ppm of NO<sub>2</sub> at different operating temperature.

We continuously injected different concentration of NO<sub>2</sub> (5-200 ppm) into the measuring chamber at 280 °C, the resulting curve is shown in Fig. S2. It is obvious that the response of In<sub>2</sub>O<sub>3</sub>-functionalized MoO<sub>3</sub> heterostructure based sensor become higher as the concentration increases. Even exposed to low concentration, the In<sub>2</sub>O<sub>3</sub>-functionalized MoO<sub>3</sub> heterostructure sensor shows a good response, which means the sensor can be used to detect very low concentration of the target gas.

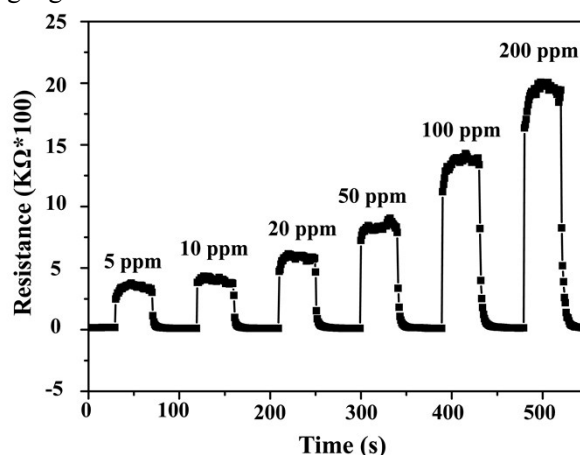


Fig. S2 The response and recovery curves of In<sub>2</sub>O<sub>3</sub>-functionalized MoO<sub>3</sub> heterostructure sensors upon exposure to 5-200 ppm of NO<sub>2</sub> at 280 °C.