

Supplementary Information for

**High performance room temperature hydrogen sensors based on combined effects of Pd decoration and Schottky barriers**

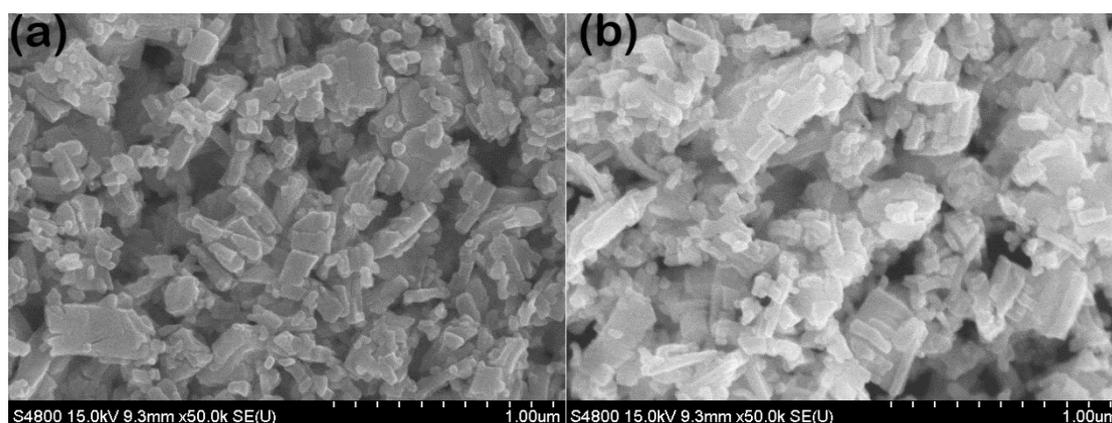
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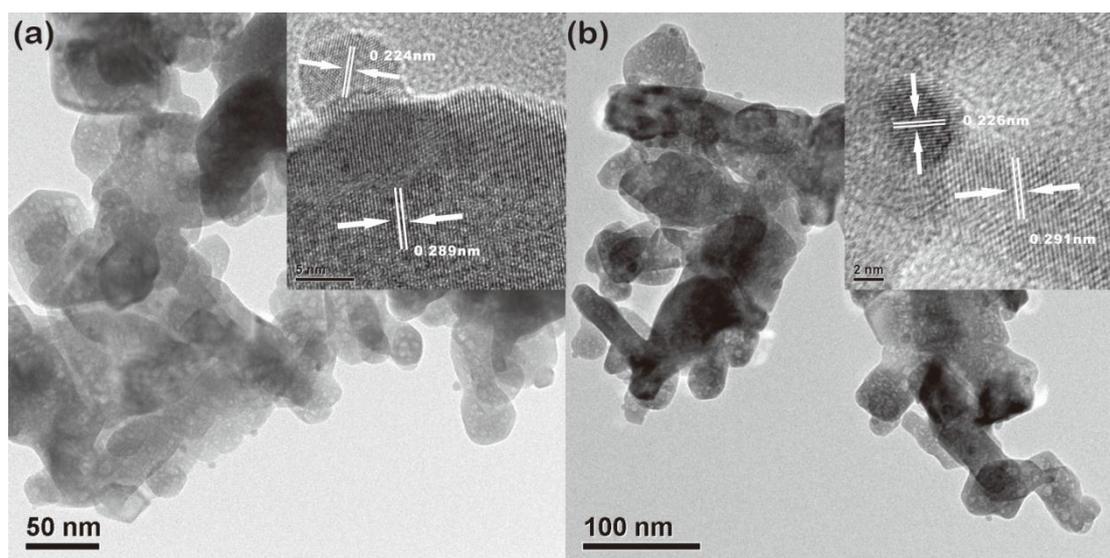
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**Details of hydrogen sensing test:** The gas mixture was prepared by injecting certain amount of pure hydrogen (99.9%) to a glass chamber with a volume of 10 L. Before testing, the chamber was flipped up and down several times to get a homogeneous gas mixture. So the gas mixture was a mixture of hydrogen and the indoor air. The temperature was about 25 °C and the relative humidity was kept at about 50% by a dehumidifier. When testing, the sensors held on the test bar were quickly inserted to the mixture and then the chamber was capped again and the concentration of hydrogen underwent a step change.

**Detailed comparison of the sensing material before and after the annealing treatment at 120 °C:** In order to investigate how the annealing treatment influence the morphology of the sensing material, one of the sensor which had been annealed at 120 °C for 24 h was soaked in 3 ml ethanol and treated for 30 min with intense sonication. The material re-dispersed in ethanol was used for further characterizations. Figure S1 shows that the morphology of the material kept unchanged after the treatment and Figure S2 shows that the Pd nanoparticles also remained stable during the annealing process.



**Figure S 1:** SEM images of the sensing materials before (a) and after (b) the annealing treatment at 120 °C.



**Figure S 2** TEM images of the sensing material before (a) and after (b) the annealing treatment at 120°C, the insets show the corresponding HRTEM images.