Supporting Information

The H_2 sensing properties of facets-dependence Pd nanoparticles supported ZnO nanorods

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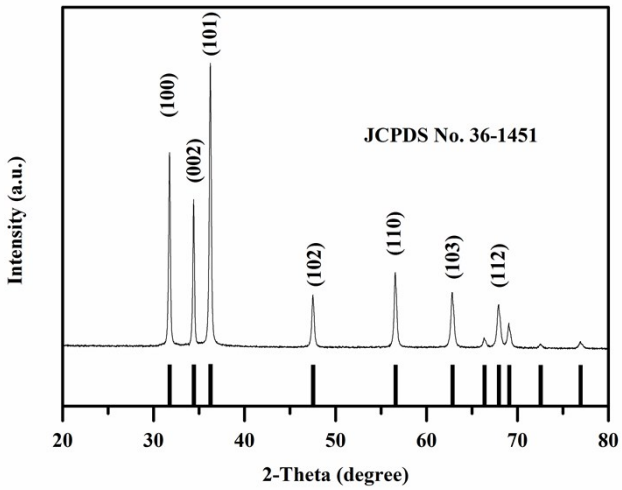

Fig. S1 XRD pattern of ZnO flower-like hierarchical Structures composed by 1-D nanorods

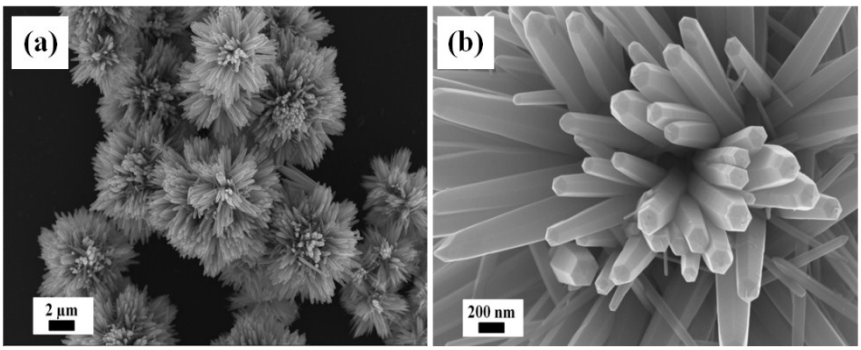

Fig. S2 SEM images of the ZnO flower-like hierarchical Structures composed by 1-D nanorods.

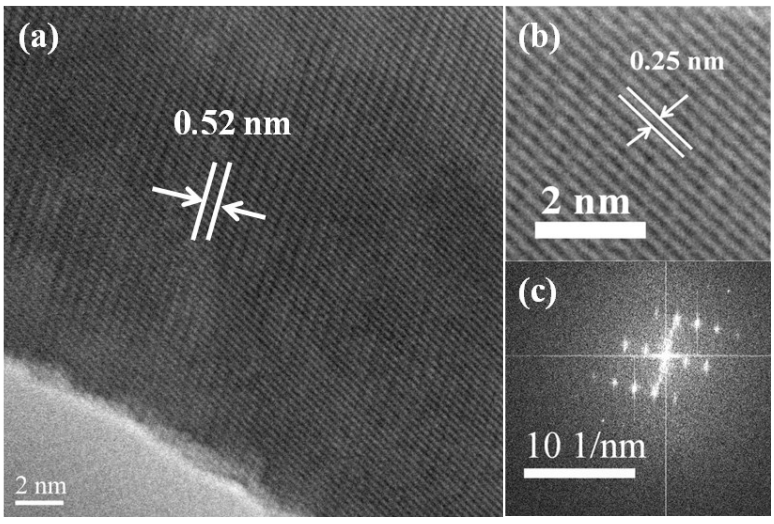

Fig. S3 HRTEM images (a and b) and SAED patterns (c) of the ZnO flower-like hierarchical Structures composed by 1-D nanorods.

The morphology and structures of ZnO nanorods reported in our previous work was demonstrated.[1] The XRD pattern shown in Fig. S1 demonstrates its better crystallinity for ZnO hexagonal structures, and match well with JCPDS PDF card No. 36-1451. Fig. S2 shows the SEM images of the ZnO, indicating that the ZnO are flower-like hierarchical structure composed by nanorods. The diameter of the flowers and nanorods are about 6 um and hundreds nanometers. Fig. 3 shows the HRTEM images of ZnO sample. The clear observation of the well-defined lattice fringes indicates that those obtained ZnO nanorod is single crystal. The lattice spaces are measured to be equal to 0.25 and 0.52 nm, corresponding to the (101) and (001) crystal plane of hexagonal wurtzite ZnO, and the direction of growth of nanorods is along <002>. The selected-area electron diffraction pattern of ZnO nanorods are shown in Fig. S3(c), and it is indicates the ZnO nanorod is single crystalline with hexagonal wurtzite structure, and the direction of the growth of the ZnO nanorods along <002>.[2]

References

[1] S. Bai, X. Liu, D. Li, S. Chen, R. Luo, A. Chen, *Sens. Actuators, B*, 2011, **153**, 110-116.

[2] S. Kundu, S. Sain, B. Satpati, S. R. Bhattacharyya, S. K. Pradhan, *RSC Adv.*, 2015, **5**, 23101-23113.