Supplementary Information

Spatial Separation of Photogenerated Electron–Hole Pairs in Solution-Grown ZnO n–p Core–Shell Nanowire Arrays toward Highly Sensitive Photoelectrochemical Detection of Hydrogen Peroxide

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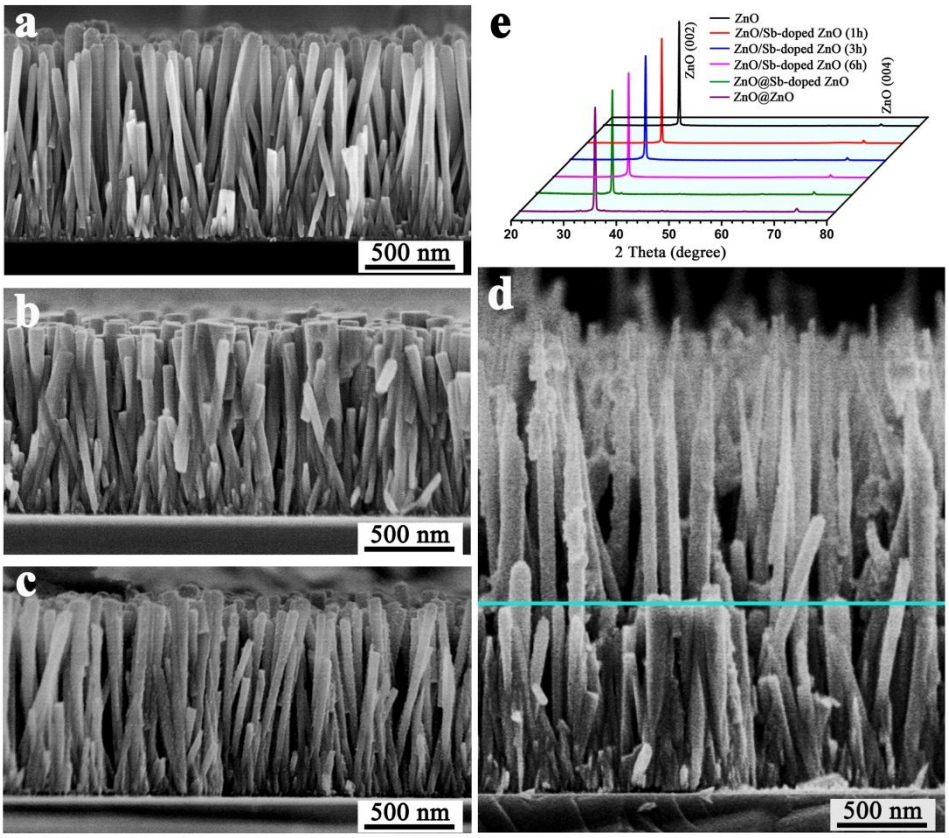

Fig. S1 The cross-sectional SEM images of (a) primary ZnO NWAs, (b) ZnO@ZnO core–shell NWAs by PEG-assisted secondary growth, (c) ZnO@Sb-doped ZnO core–shell NWAs by PEG-assisted secondary growth, and (d) ZnO/Sb-doped ZnO axial NWAs by secondary growth without PEG. The blue line in (d) indicates the boundary where the axial secondary growth started. The time for secondary growth was 6 h in each case. (e) XRD patterns of primary ZnO NWAs, ZnO/Sb-doped ZnO axial NWAs by secondary growth without PEG during different growth time, ZnO@Sb-doped ZnO core–shell NWAs by PEG-assisted secondary growth and ZnO@ZnO core–shell NWAs by PEG-assisted secondary growth.

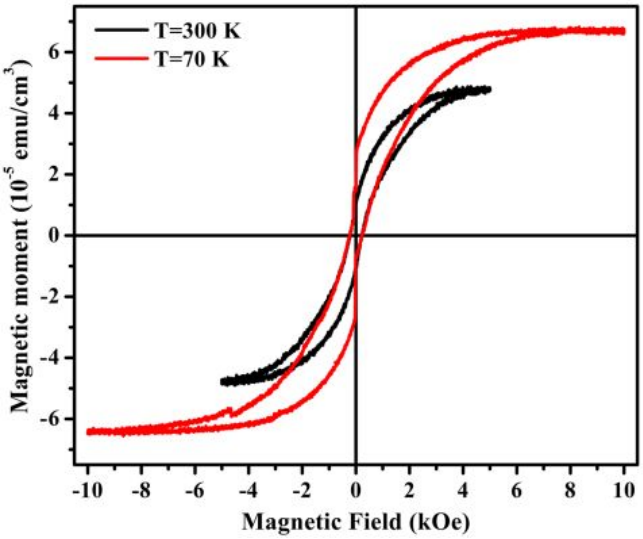

Fig. S2 Magnetization behavior of ZnO@Sb-doped ZnO core–shell nanowires at 300 K and 70 K.

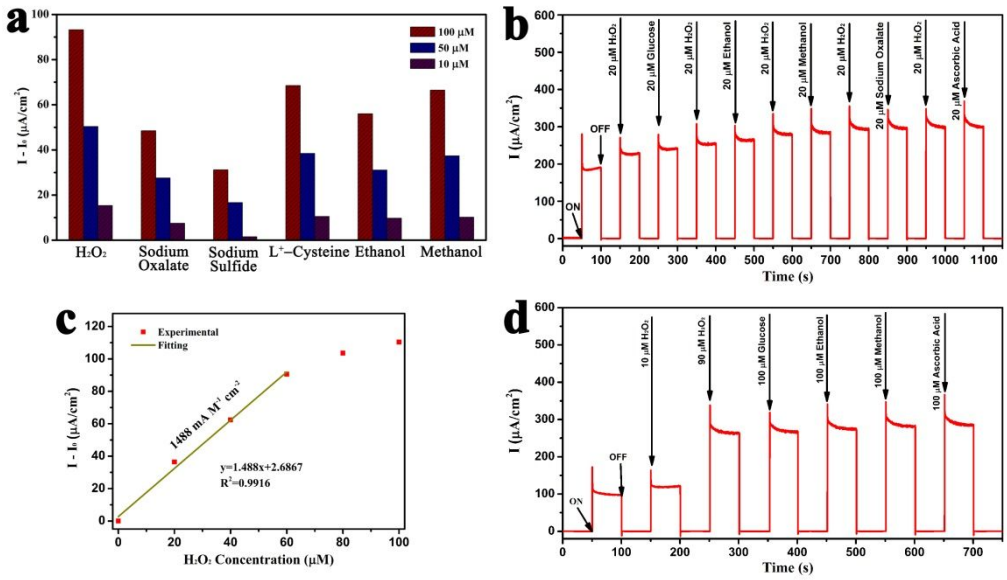

Fig. S3 (a) The current change of ZnO@Sb-doped ZnO core–shell NWAs in response to different hole scavengers at different concentrations. (b) Photocurrent response curves of ZnO@Sb-doped ZnO core–shell NWAs against H_2O_2 with concentration initiating from 0 to 100 μM by a 20 μM interval in the presence of different interfering species of glucose, ethanol, methanol, sodium oxalate and ascorbic acid (20 μM). (c) Linear relationship between the current change and the H_2O_2 concentration in a range of 0–60 μM. (d) Photocurrent response curves intended for the interference studies of ZnO@Sb-doped ZnO core–shell NWAs by successive additions of 100 μM glucose, 100 μM ethanol, 100 μM methanol and 100 μM ascorbic acid in 100 μM H_2O.