

Supporting Information for

**Effects of a low-temperature sulfidation process on the microstructural properties of ZnO nanowires: ZnS formation and nanoscale Kirkendall effect**

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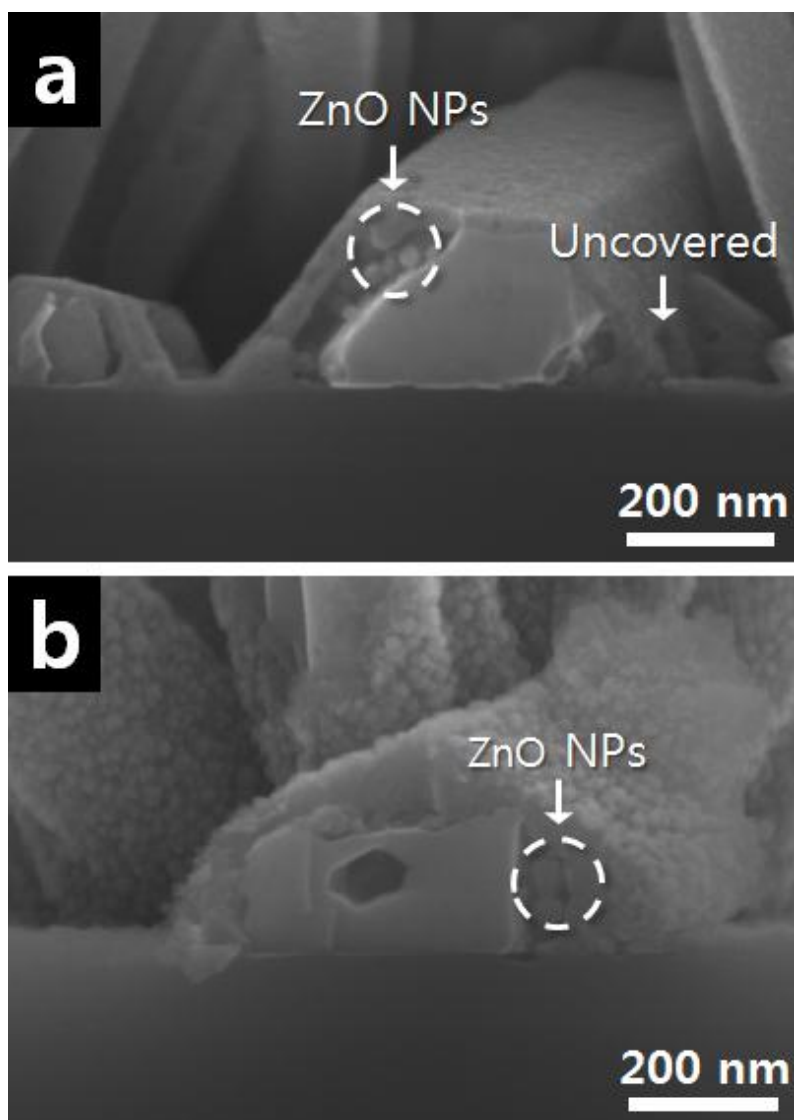
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**Figure Captions for Supporting Information.**

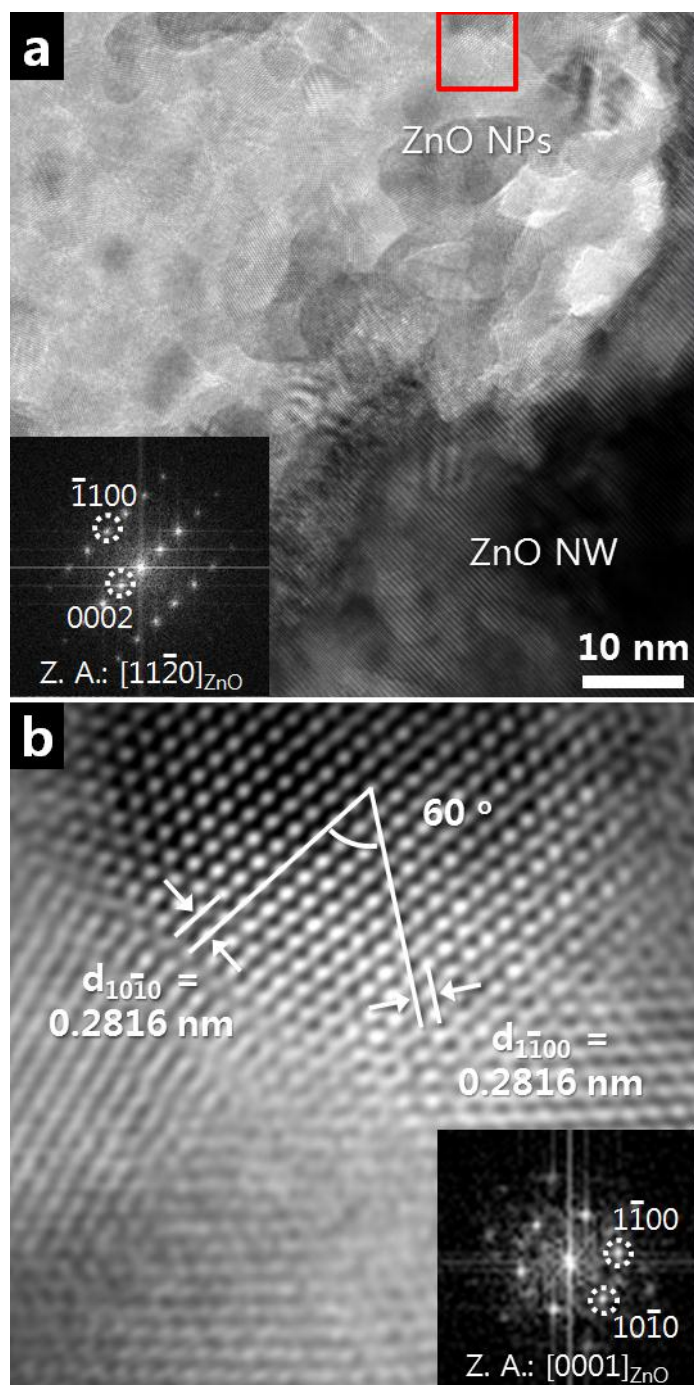
**Figure S1.** SEM images of broken ZnO-ZnS core-shell nanowires (NWs); (a) at a sulfidation time of 10 min and (b) at a sulfidation time of 8 h. ZnO nanoparticles (NPs) are observed between ZnO core and ZnS shell. Uncovered areas are detected on the right side of nanowires in (b).

**Figure S2.** (a) A high-resolution TEM image of a red dotted square in Fig. 4b. (b) An enlarged image from the red square in (a). The lattice fringes match well to hexagonal ZnO (JCPDS card no. 36-1451). The inserts correspond to fast-Fourier transformation results of the ZnO core (insert in (a)) and NP (insert in (b)), respectively).

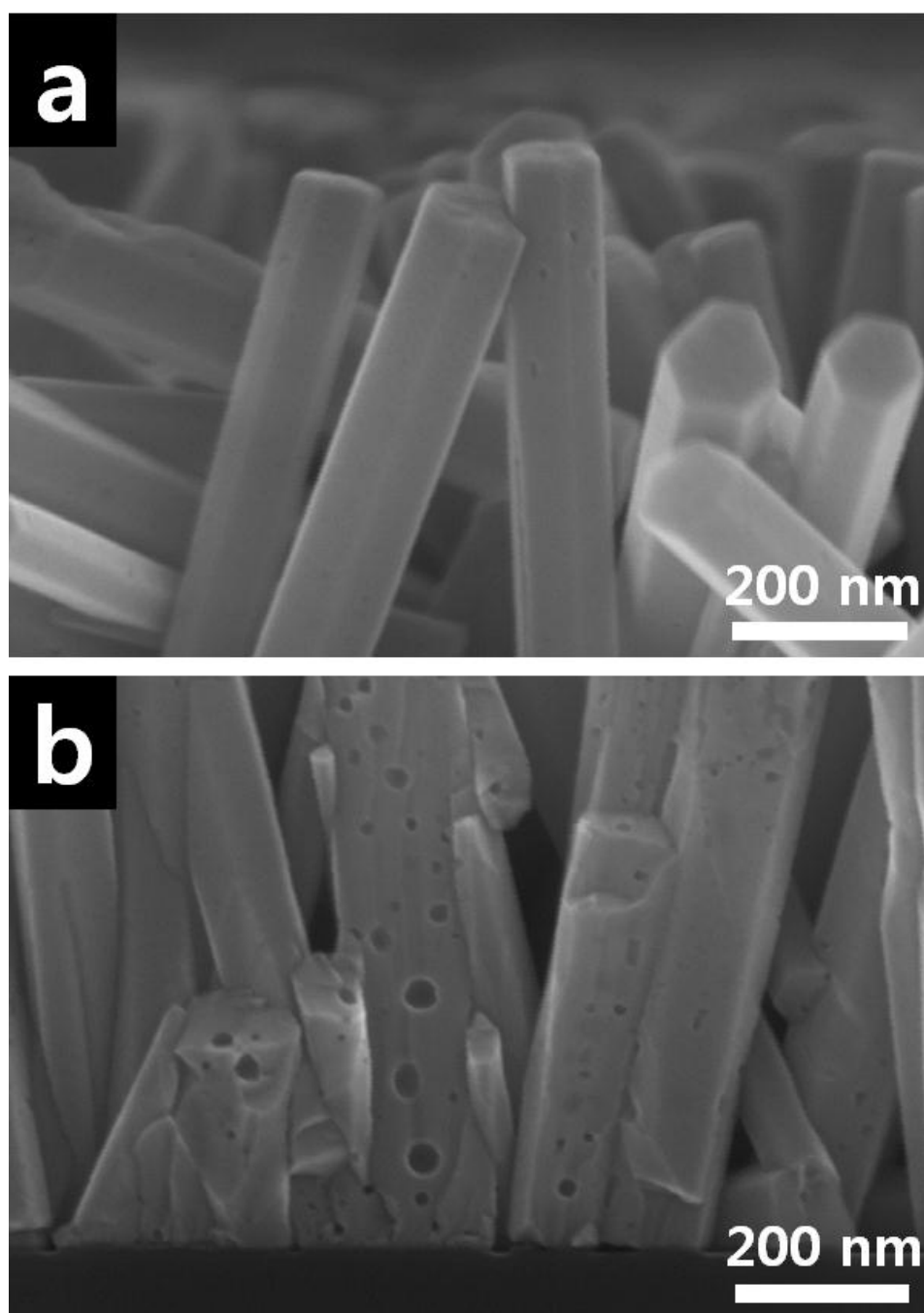
**Figure S3.** SEM images of hydrothermally grown ZnO nanowires after annealing in air at 600 °C for 1 h: (a) outer surface of ZnO nanowires; (b) cleaved inner surface of ZnO nanowires. Vacancies coalesce to form voids, which is a clear evidence for the high concentration of vacancies.



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