Supporting Information

Ultraviolet Photodetectors with High Photosensitivity Based on Type-II ZnS/SnO_2 Core/Shell Heterostructured Ribbons

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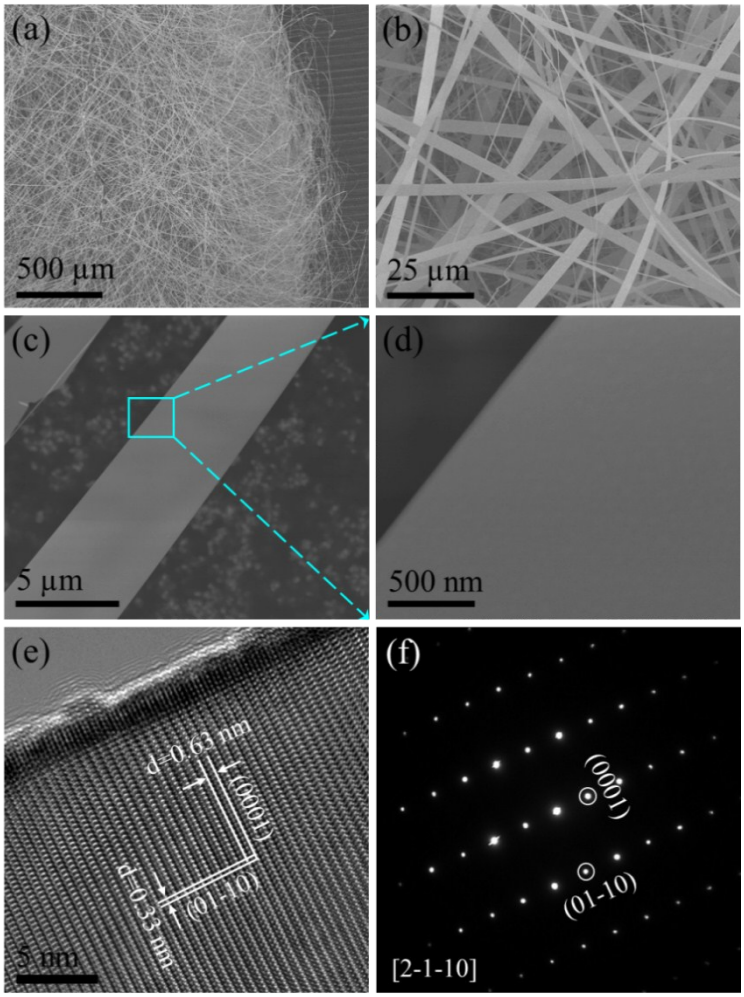

Figure S1. (a-d) SEM images of ZnS ribbons at different magnifications (e, f) HRTEM image and the SAED pattern of a pure ZnS ribbon.

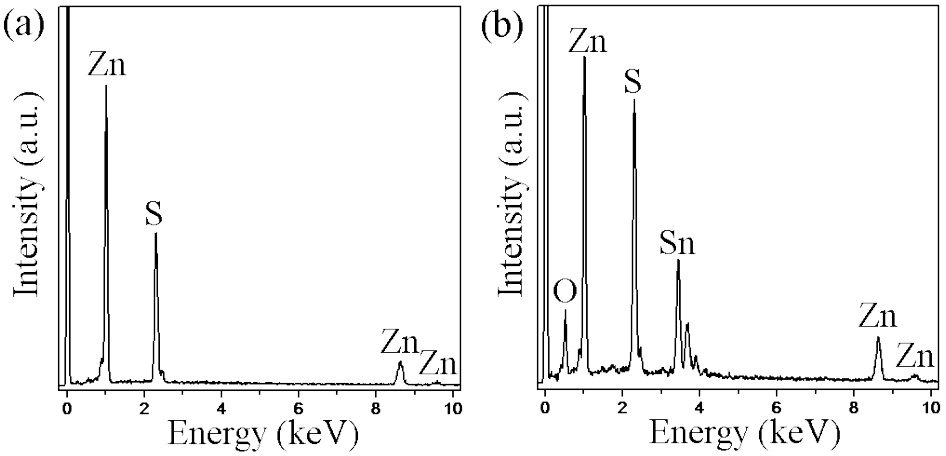

Figure S2. EDX spectra recorded from (a) ZnS ribbons and (b) ZnS/SnO_2 core/shell ribbons, respectively.

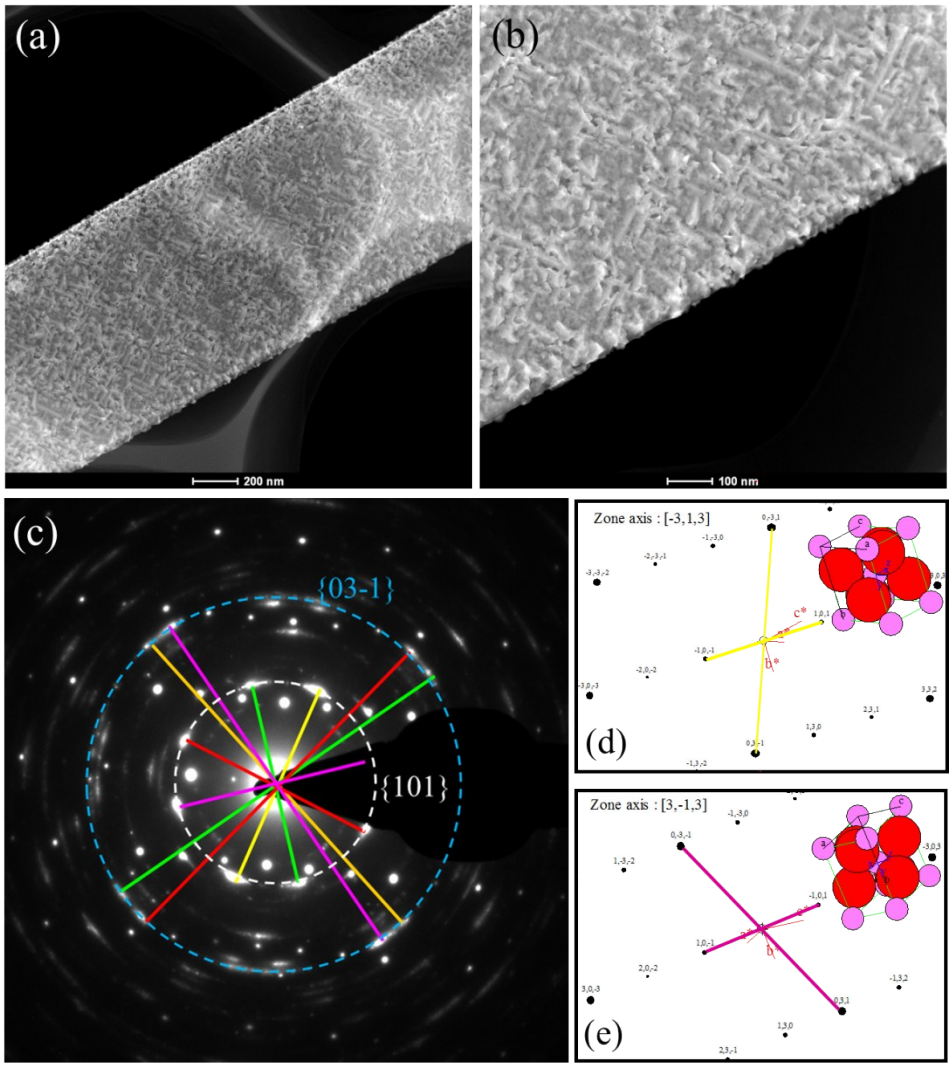

Figure S3. (a) HAADF-STEM image of ZnS/SnO_2 core/shell ribbon; (b) Magnified HAADF-STEM image of the core/shell ribbon. From images, it can be seen that the SnO_2 nanoparticles are indeed show orientation relationships with the ZnS ribbon, indicating a preferred growth manner; (c) SAED pattern of ZnS/SnO_2 core/shell ribbon, in which different sets of SnO_2 diffractions are indicated with different colors; (d, e) Simulated electron diffraction patterns with zone axes of [-313] and [3-13], respectively. Crystallographically, these two zone axes are equivalent. The stimulated electron diffractions of SnO_2 from the other two equivalent zone axes ([-133] and [1-33]) were not shown here.

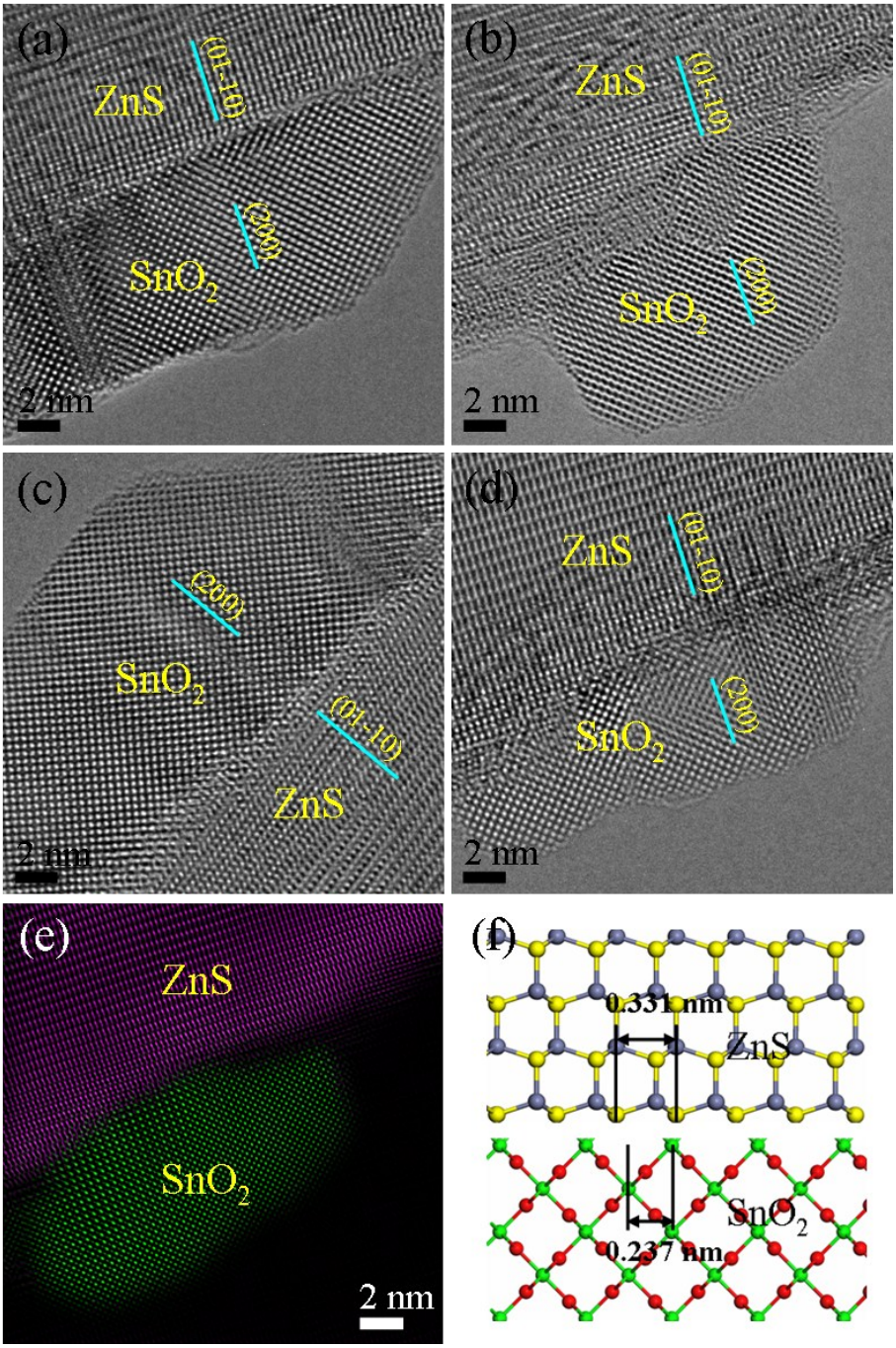

Figure S4. (a-d) HRTEM images of hetero-interface between ZnS and SnO_2; (e) Reconstructed image corresponding to Figure 3e in the manuscript; (f) relax atomic mode of hetero-interface region.

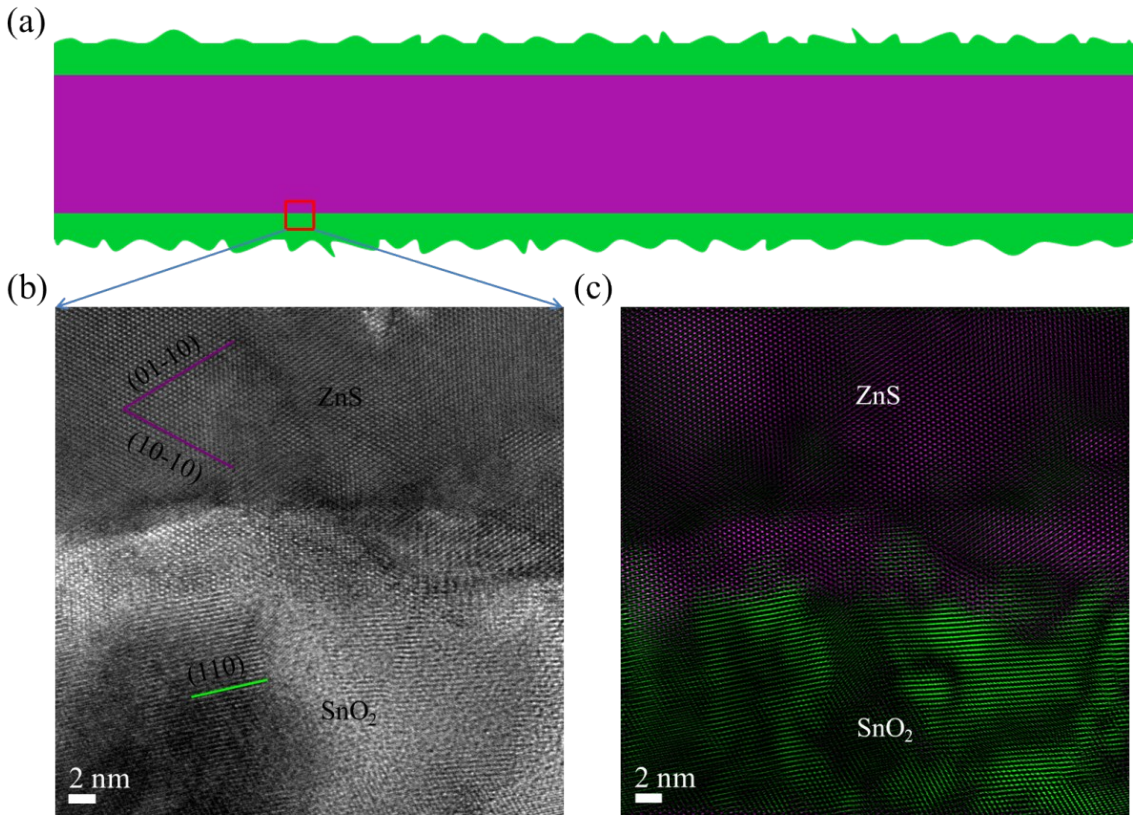

Figure S5. (a) Cross-sectional view of schematic diagram of ZnS/SnO_2 core/shell ribbon; (b, c) HRTEM and relevant reconstructed IFFI-RGB images of the cross section ribbon.

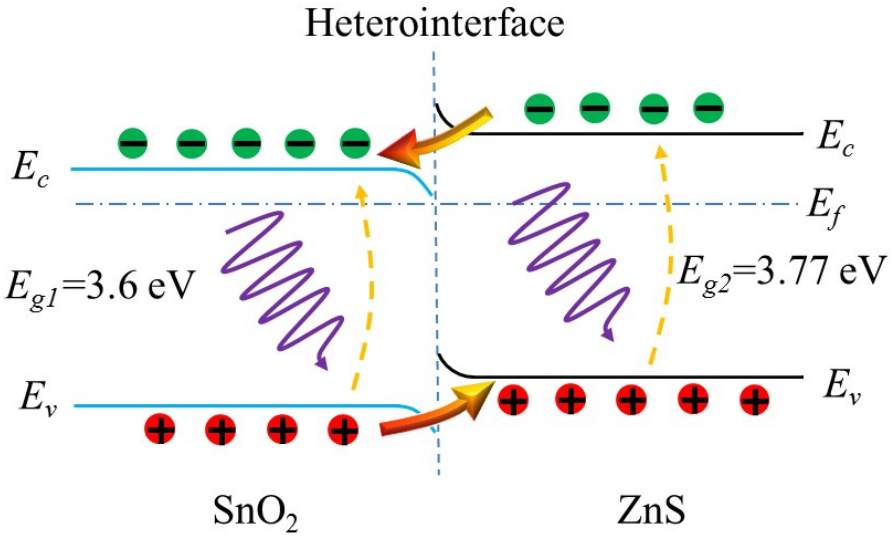

Figure S6. Schematic of the band alignment of ZnS/SnO_2 core/shell ribbon.