Supporting Information

High-yield synthesis of single-crystalline zinc oxide nanobelts and their applications in novel Schottky solar cells

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Experimental details: ZnO nanobelts were synthesized by a vapor phase transport method. 0.3 g mixture of ZnO and graphite powder was used as the source material; they were loaded at the bottom of a small one-end sealed quartz tube. Several pieces of *p*-type Si (100) wafers coated with a 5 nm thick Au thin layer were placed in the downstream of the source material. 5 sccm air was used as the carrier gas. Before raising temperature, the big quartz tube was pumped to 1 Torr, and then the furnace was heated to 900 °C and kept for 30 min. Upon the heating stage was finished, the rotary pump was turned off. After naturally cooling to the room temperature, thick gray product was deposited uniformly on Si substrates (850 °C).

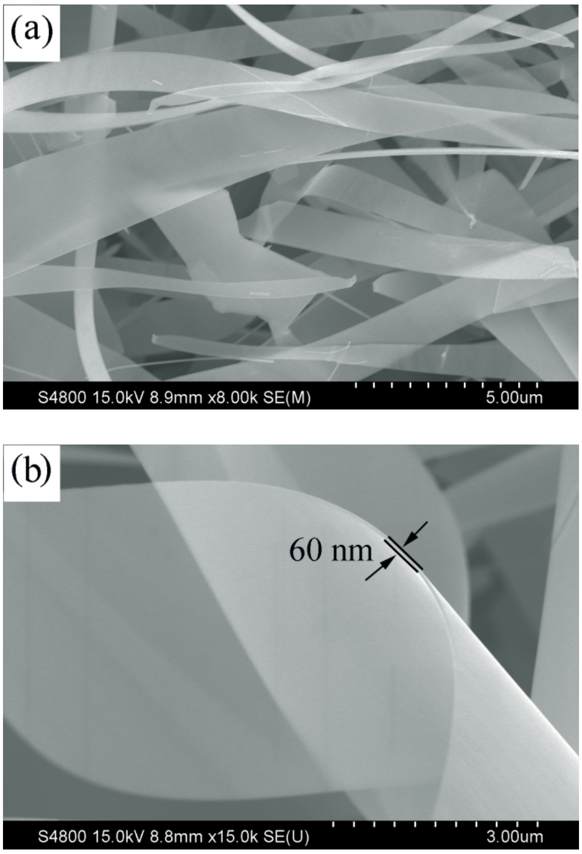

Fig. S1 SEM images of ZnO nanobelts, indicating: a) flat surface and b) about 60 nm thickness.

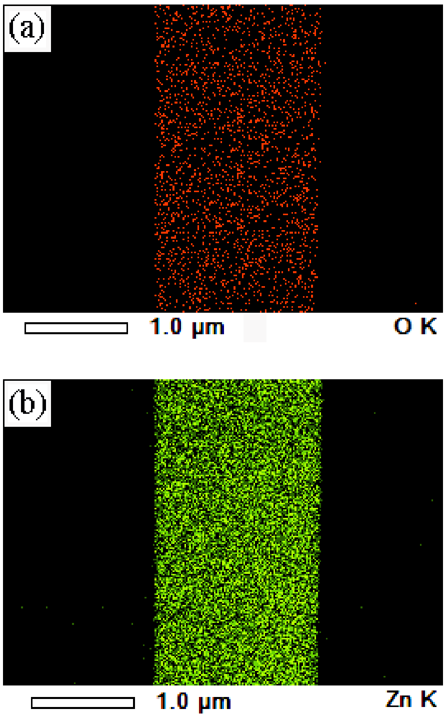

Fig. S2 a) and b): Spatially-resolved O and Zn elemental maps in a single ZnO nanobelt, respectively.

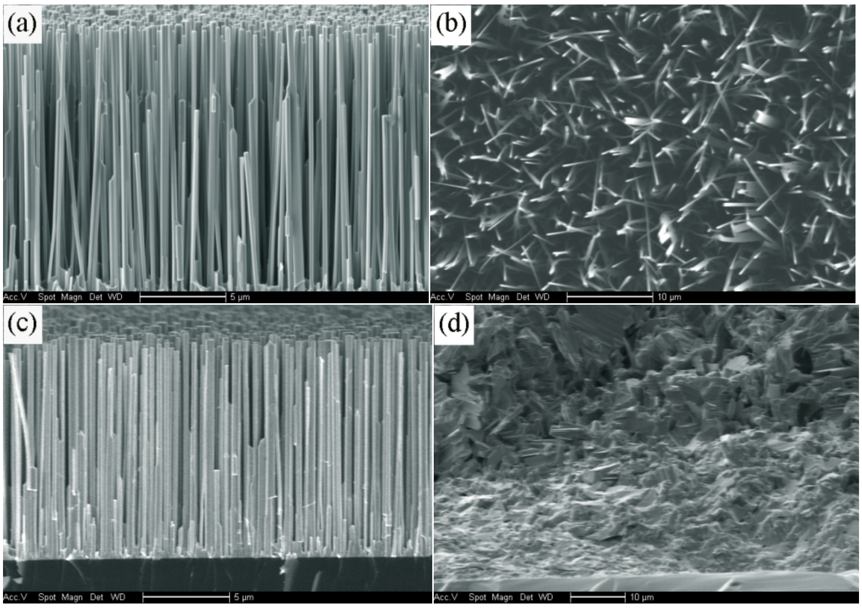

Fig. S3 SEM images of ZnO nanostructures synthesized under different conditions: a) nanowire arrays; b) nanowires; c) nanowire arrays; d) dense films.

Different types of 1D (nanowires/rods/tubes, etc) ZnO nanostructured solar cells	**Conversion efficiency (η) [%]**	**Reference**
Oligo- and polythiophene hybrid *p-n* junction	0.036	1
P3HT hybrid	0.04	2,3
P3HT hybrid: TiO_2	0.16-0.52	2,3
Dye-sensitized cells (DSCs)	0.1-5.8	4, 5 (Review)
ZnS-ZnO core-shell	0.01-2.72	6
CdSe-coated	0.41-1.52	7
CdSe quantum dots-sensitized	0.01-0.44	8,9
Au nanoparticles-sensitized Schottky (+Dye sensitized)	0.3 (1.2)	10
Cu_2O-ZnO *p-n* heterostructure	0.1, 0.88	11,12
Network-Schottky junctions	0.042	Present work

Tabel S1 Comparative results of recently reported 1D ZnO nanostructured solar cells and present work.

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