High-performance flexible dye-sensitized solar cells by using hierarchical anatase TiO_2 nanowire arrays

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Supporting Information

Figure S1 Photograph of a piece of Ti mesh in bended status.

Figure S2 SEM image of Ti mesh.

Figure S3 Experiment setup for electrochemical anodization of Ti mesh.

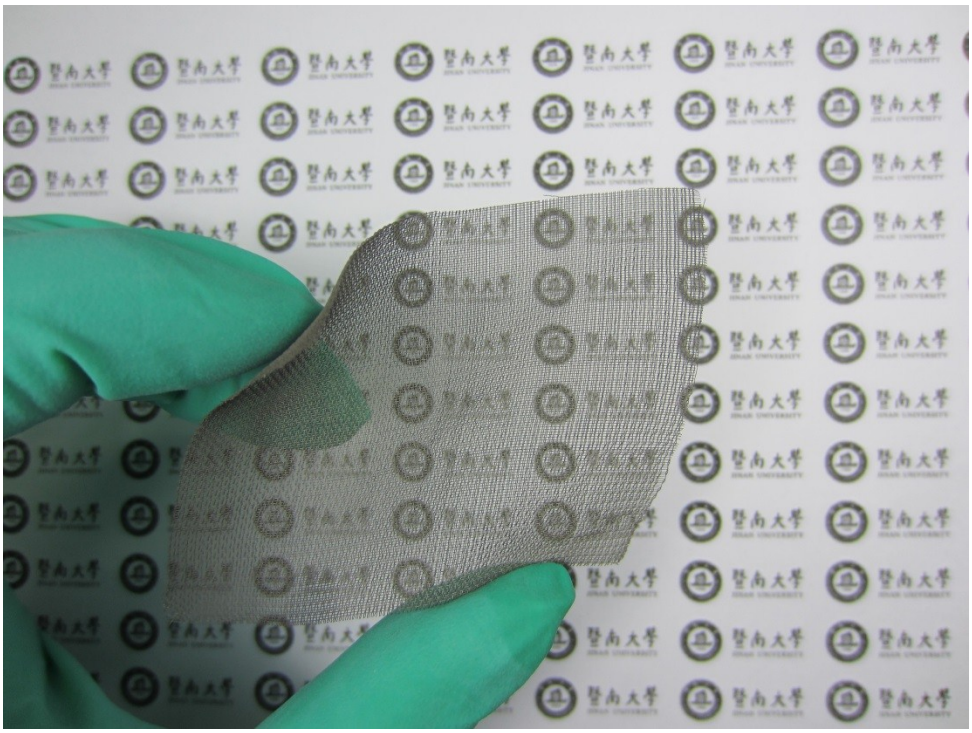
Figure S4 XRD patterns of $Na_2Ti_2O_5 \cdot H_2O$, $H_2Ti_2O_5 \cdot H_2O$ and TiO_2 nanowires on Ti mesh.

Figure S5 UV-Vis absorption spectra of desorption dye from different photoanode (NT, NW and HNW).

Figure S6 (a) Schematic of the bending angle. (b) *J-V* curves of the TiO_2 HNW arrays mesh based DSSCs under different bending conditions.

Table S1 Detailed comparison of the photoanode, counter electrode, PCE (η), bending test, effective area and whether or not sealed between different mesh based flexible DSSCs.

Figure S7 SEM image of the commercial ink counter electrode. Inset is the low-magnification image of Ink/Ti mesh electrode.



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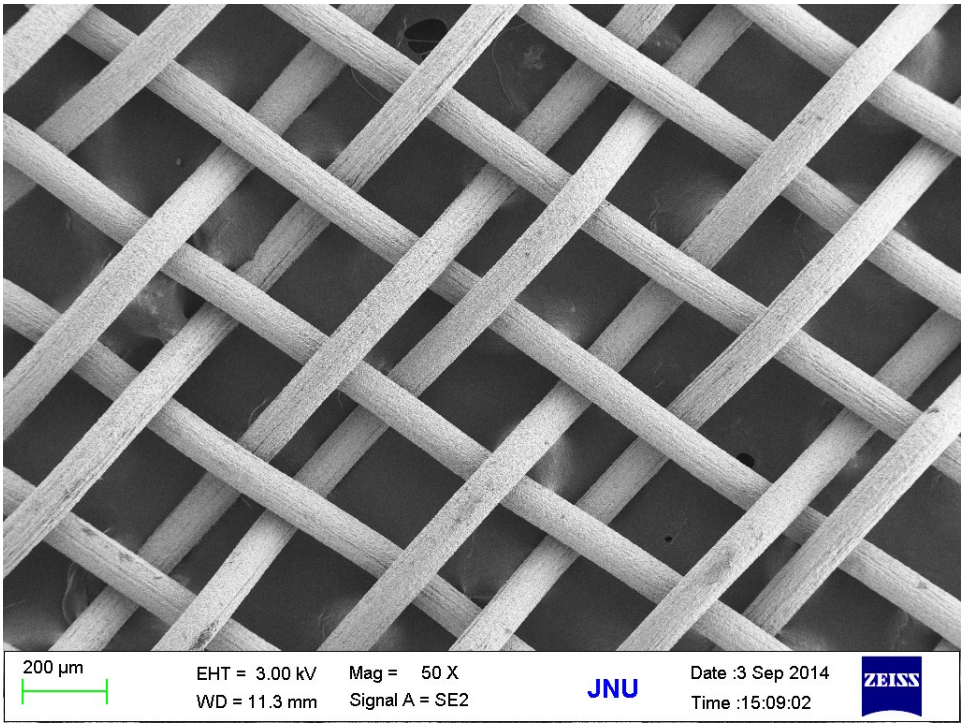
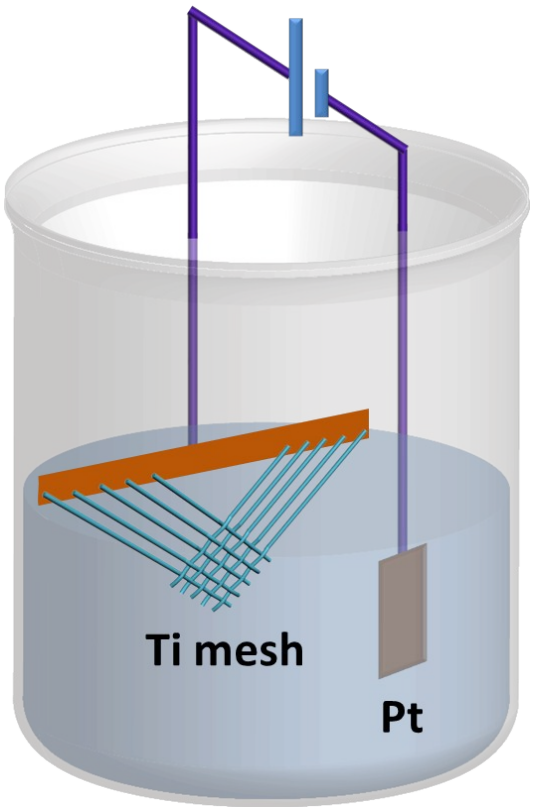


Figure S2 SEM image of Ti mesh.



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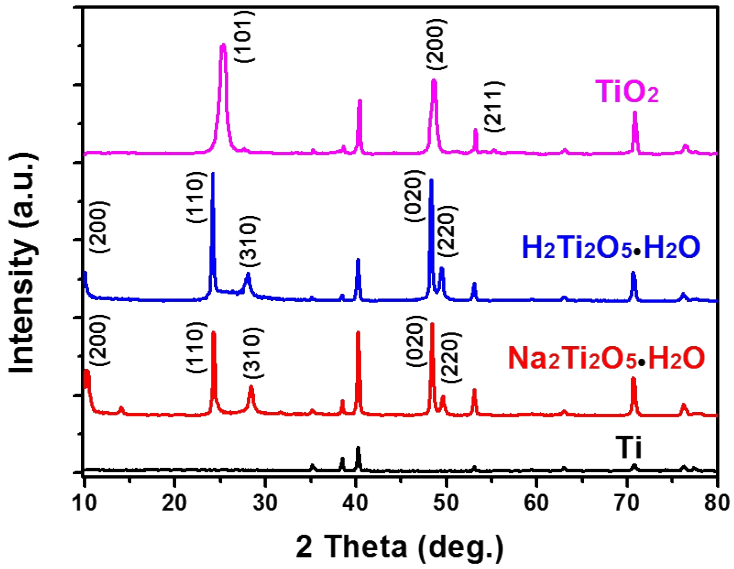

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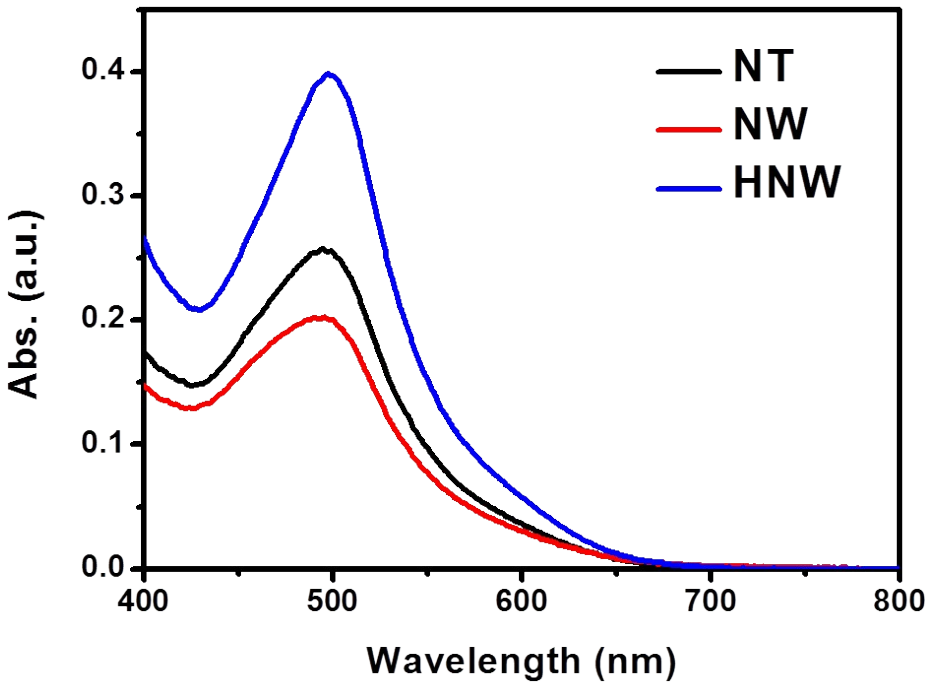

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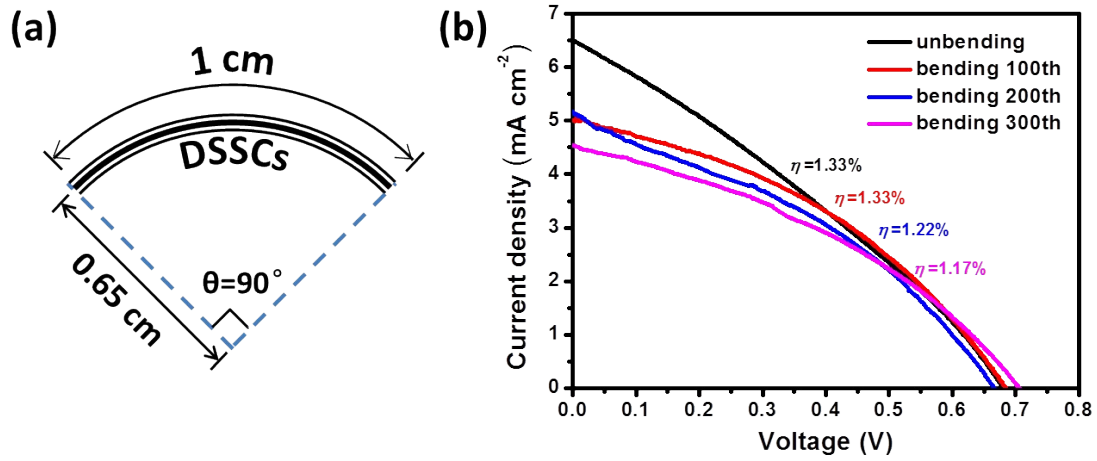

Figure S6 (a) Schematic of the bending angle. (b) *J-V* curves of the TiO_2 HNW arrays mesh based DSSCs under different bending conditions.

photoanode	counter electrode	PCE (%)	bending test	effective area	sealed
NP- stainless steel mesh (120 meshes)	Pt foil	1.49	N/A	N/A	N/A
NT-Ti mesh (50 meshes)	Pt/ITO/PET	1.23 (calculated from the geometric area of Ti mesh)	Different angle (no mention of times)	Photo mask ($0.283\ cm^2$)	N
NT-Ti mesh (80 meshes)	CNT fiber textile	3.62 (CNT fiber textile sandwiched between two Ti wire textiles)	Maintain ~90% of PCE after 100th bending (no mention of angle)	Full area	Y
NP- stainless steel mesh (635 meshes)	Ink, Pt on stainless steel mesh	0.83 for Ink, 0.93 for Pt	almost invariably of PCE (times: 500, radius: 1 cm)	Full area	Y
Our work (HNW–Ti mesh, 100 meshes)	Pt on Ti mesh	1.75	Maintain ~90% of PCE (times: 300, angle: 90°)	Full area	Y

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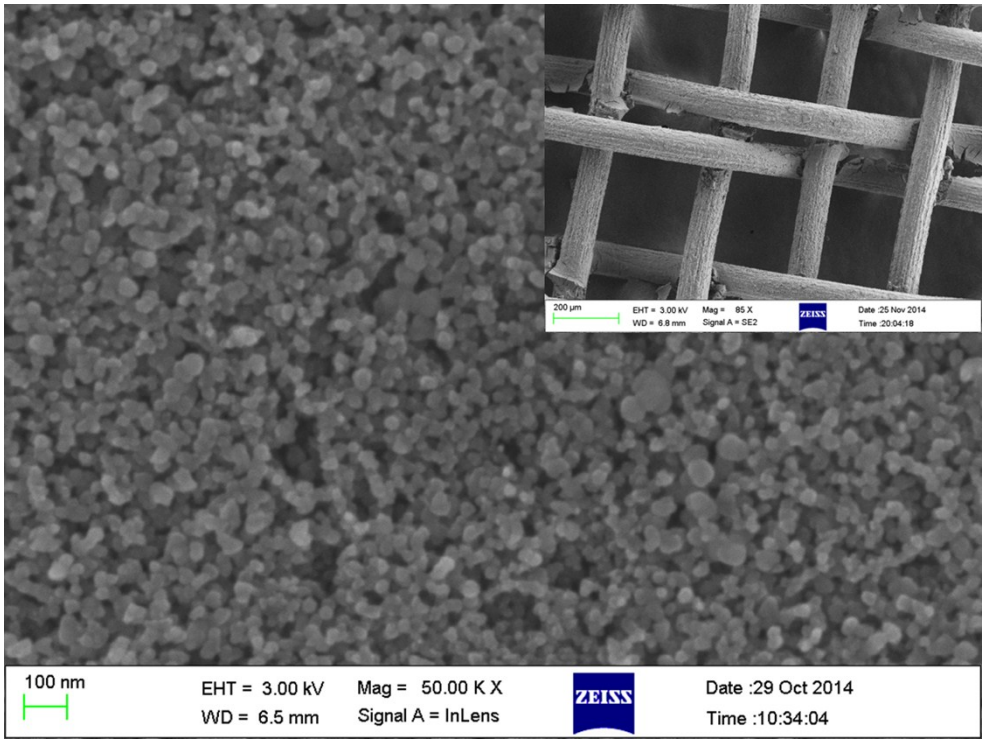

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