

Facile in situ synthesis of dendrite-like ZnO/ZnTe core/shell nanorod heterostructure for sensitized solar cells

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Supporting Information

1. XRD patterns of ZnO/ZnTe on FTO glass, ZnTe nanotubes on FTO glass and a FTO-coated glass substrate.

ZnTe nanotubes on FTO glass showed only characteristic peaks from FTO and ZnTe nanocrystals, revealing the ZnO nanorods were removed thoroughly.

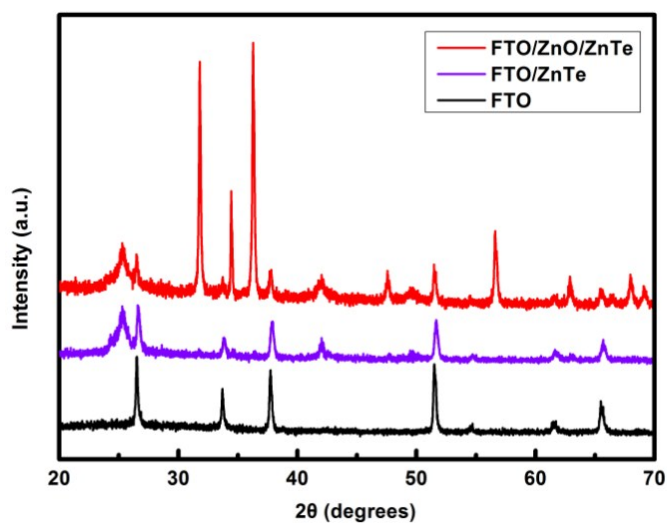


Fig S1 XRD patterns of ZnO/ZnTe on FTO glass, ZnTe nanotubes on FTO glass and a FTO-coated glass substrate.

2. Atomic percentage of Zn, Te, O elements

Table S1. Atomic percentage of Zn, Te, O elements in ZnTe, ZnO, and ZnO/ZnTe

| Sample | C (Atom %) | O (Atom %) | Zn (Atom %) | Te (Atom %) |
|-----------|------------|--------------|--------------|--------------|
| ZnO | 31.70 | 35.19 ± 7.04 | 33.11 ± 6.62 | / |
| ZnTe | 6.51 | 15.31 ± 3.06 | 32.92 ± 9.05 | 45.25 ± 9.05 |
| ZnO/ ZnTe | 22.18 | 27.01 ± 5.40 | 31.21 ± 6.24 | 19.59 ± 3.92 |

3. Absorption spectra

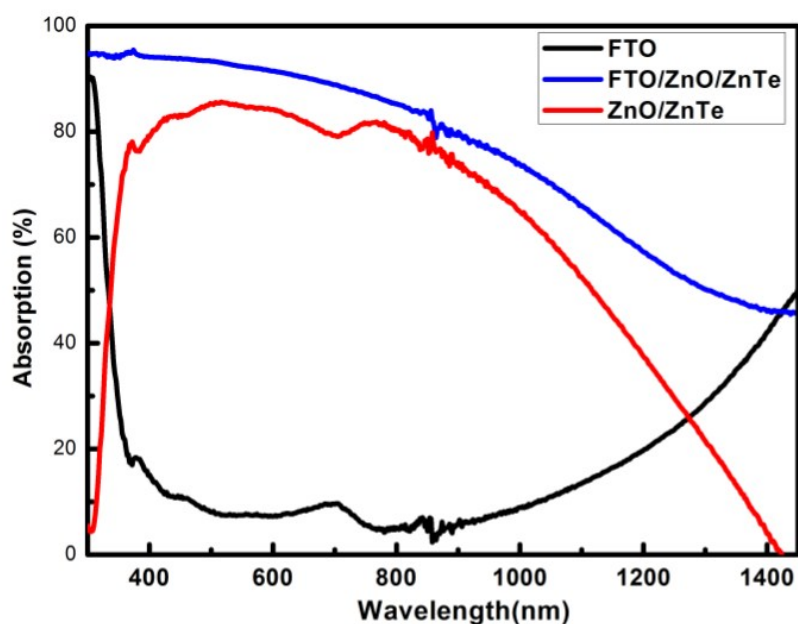


Fig. S2 UV-vis-NIR absorption spectrum of FTO substrate, FTO/ZnO/ZnTe and ZnO/ZnTe heterostructure (using bare conductive glass as reference)

4. Incident monochromatic photon-to-current conversion efficiency (IPCE) spectra

The IPCE spectra measurements were carried out by the IPCE measurement system (QEX10 PV, PV Measurements Inc., USA). As shown in Figure S3, the IPCE curves have clear response from the wavelength of 300 nm~1400 nm, consistent with the absorption spectrum of ZnO/ZnTe (Figure S2). It is also noted that ZnS layer improved the IPCE values, which is in good agreement with the trend in J_{sc} values.

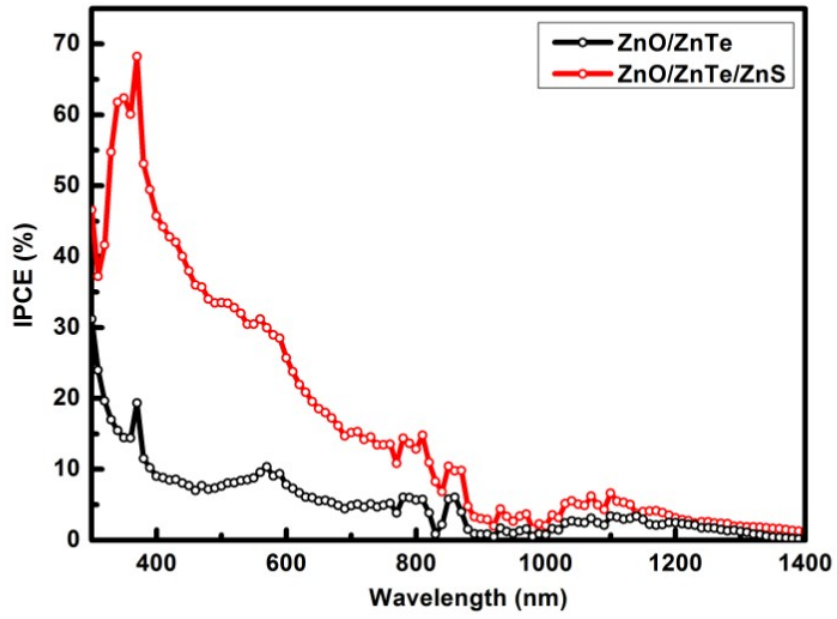


Fig. S3 IPCE curves of solar cells based on ZnO/ZnTe and ZnO/ZnTe/ZnS photoanodes.