Supporting Information

Optical Design of ZnO-based Antireflective Layers for Enhanced GaAs Solar Cell Performance

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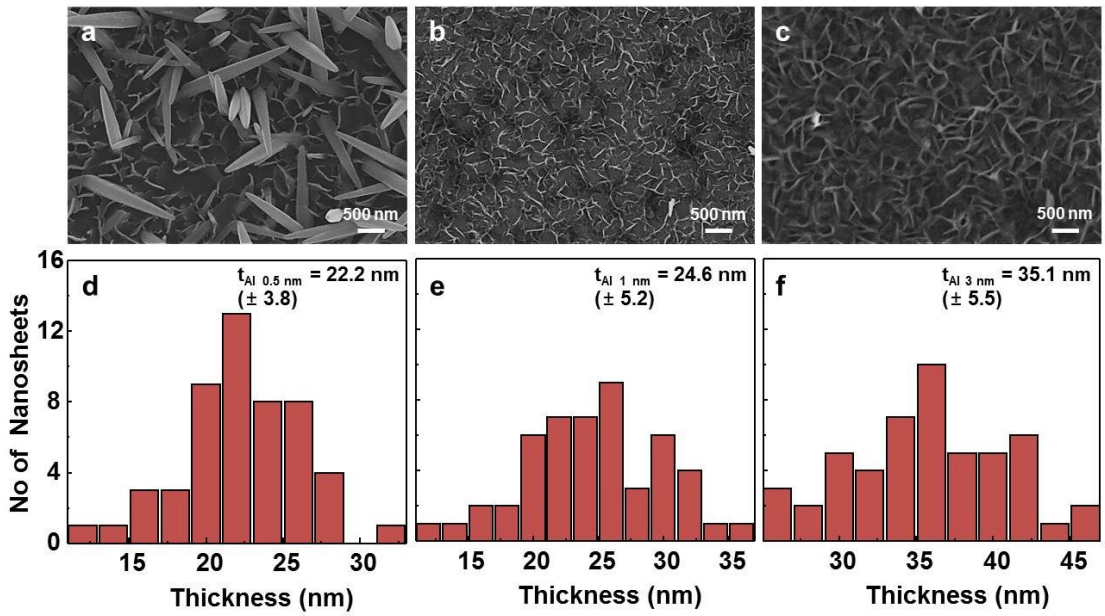

Fig. S1 Top view of SEM image for ZnO nanosheet/Al/ZnS with thickness of Al (a) 0.5 nm, (b) 1 nm, (c) 3 nm and (d-f) histogram of the thickness distributions of the nanosheets with Al thickness, respectively.

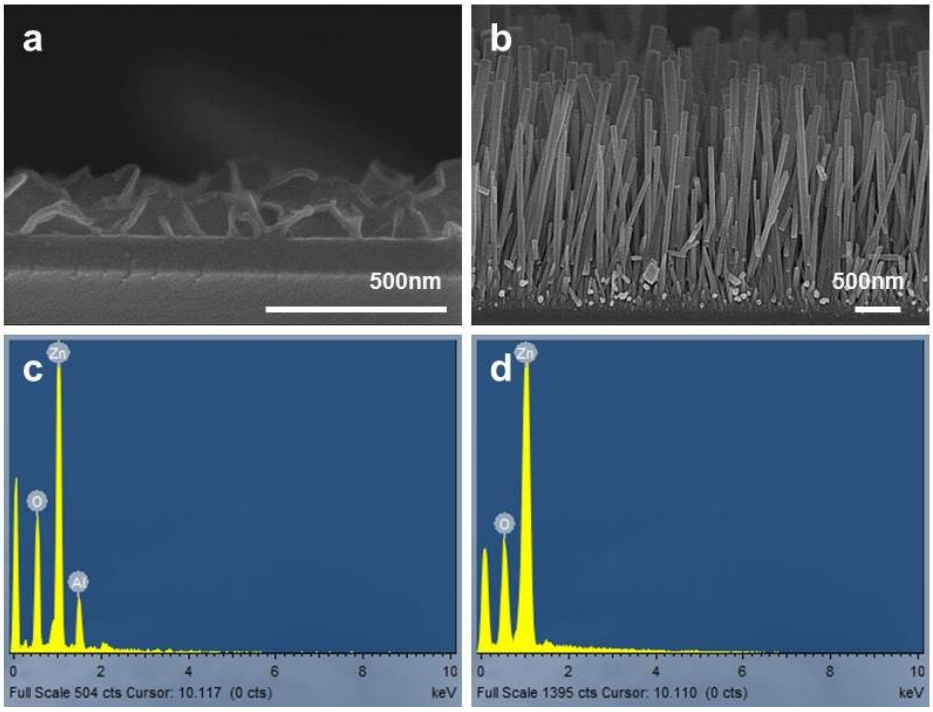

Fig. S2 Scanning electron micrographs of (a) ZnO nanosheets and (b) ZnO nanowires grown on Si substrates. The corresponding EDXS results are also shown in (c) and (d), respectively.

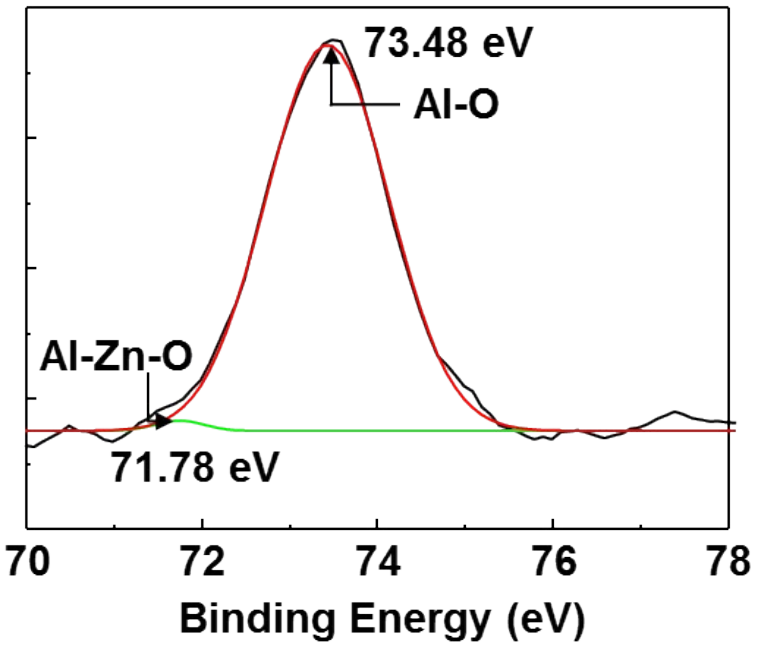

Fig. S3 The peak in the Al 2p spectra corresponds to Al-O and Al-Zn-O bonds. The Al-O binding energy was observed at 73.48 eV, lower than that (~ 75.6 eV) of the pure Al_2O_3.

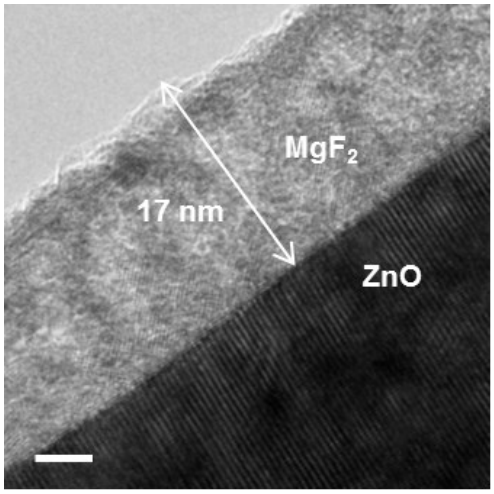

Fig. S4 Transmission electron microscopy (TEM) images of MgF_2 thickness on MgF_2/ZnO nanowires (scale bar is 5 nm).

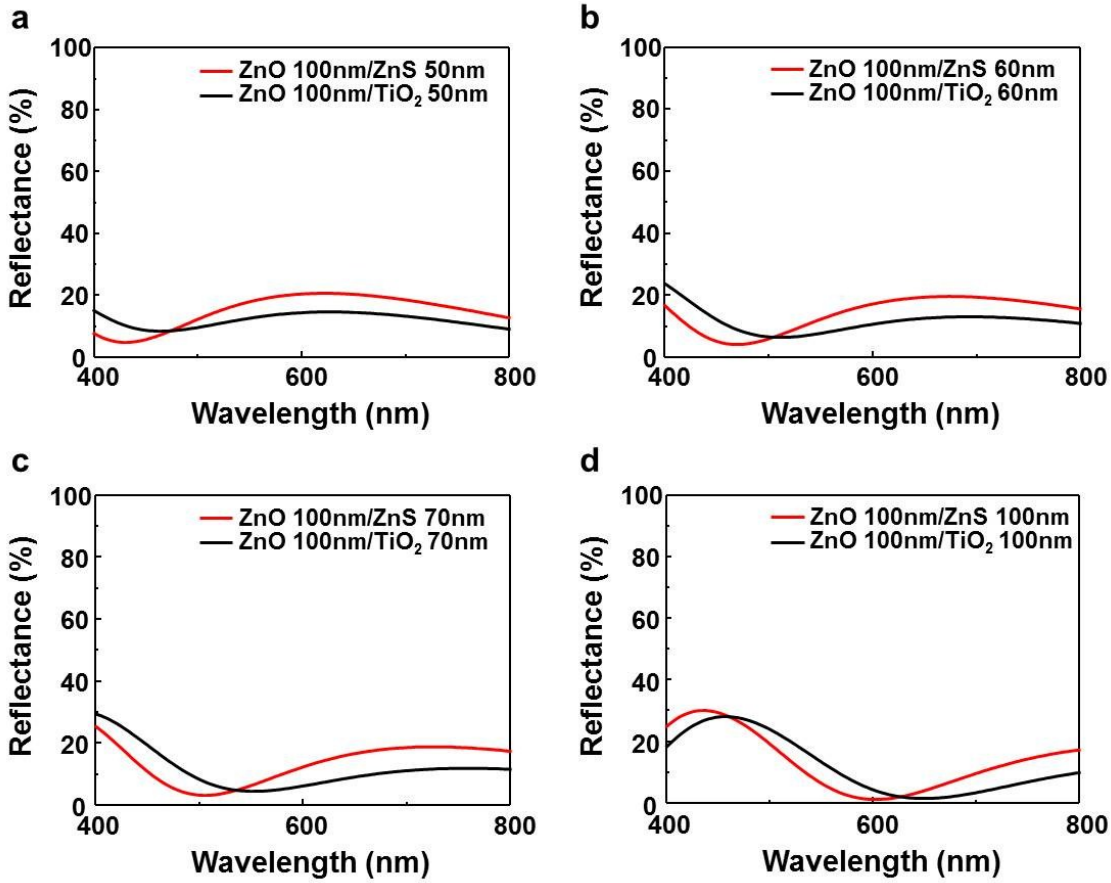

Fig. S5 Simulated reflectance spectra for the ZnO/TiO_2 and ZnO/ZnS double layered films with

different thickness. The thickness is ZnO 100nm, TiO_2 (or ZnS) (a) 50 nm, (b) 60 nm, (c) 70 nm and (d) 100 nm.