

Supplementary Information

Visible to Near-Infrared Light Harvesting in Ag₂S Nanoparticles/ZnO Nanowire Array Photoanodes

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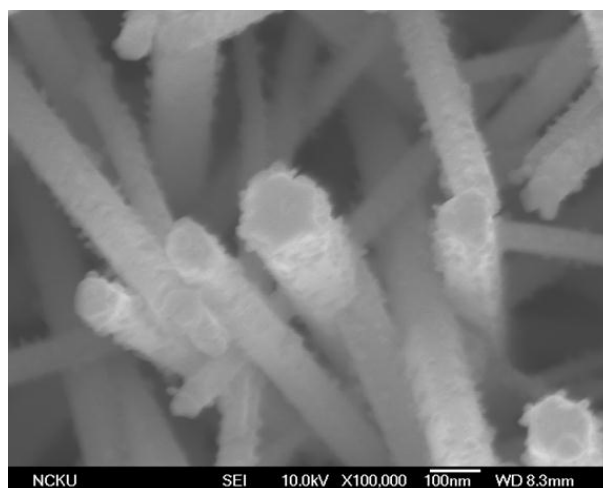


Fig. S1 SEM image of NPs formed on ZnO NW array in aqueous solution of thiourea and AgNO₃ at 65°C without ultrasound irradiation (0W-30).

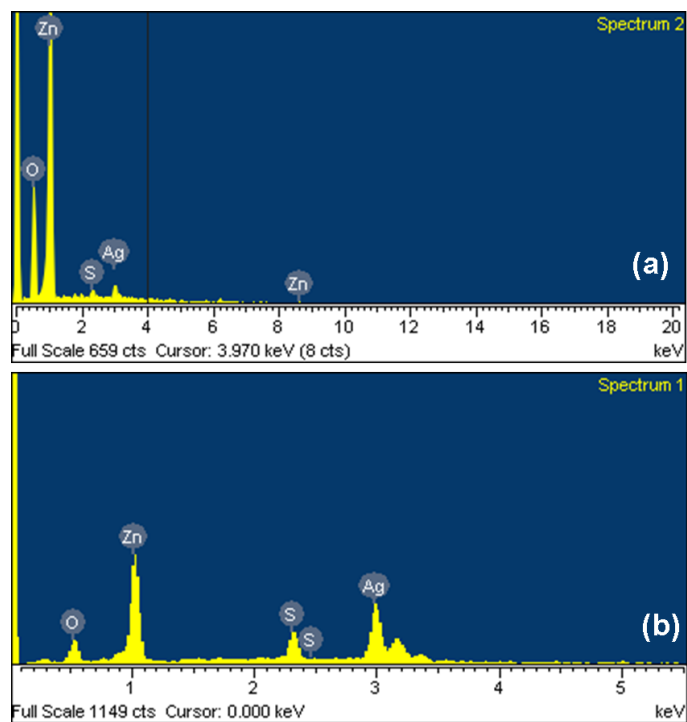


Fig. S2 EDS spectra of (a) 0W-30 and (b) 4W-30. The ratios of Ag:S are 1.35:1 and 2:1 in (a) and (b), respectively.

Sonochemical synthesis of the Ag₂S NPs on the ZnO film

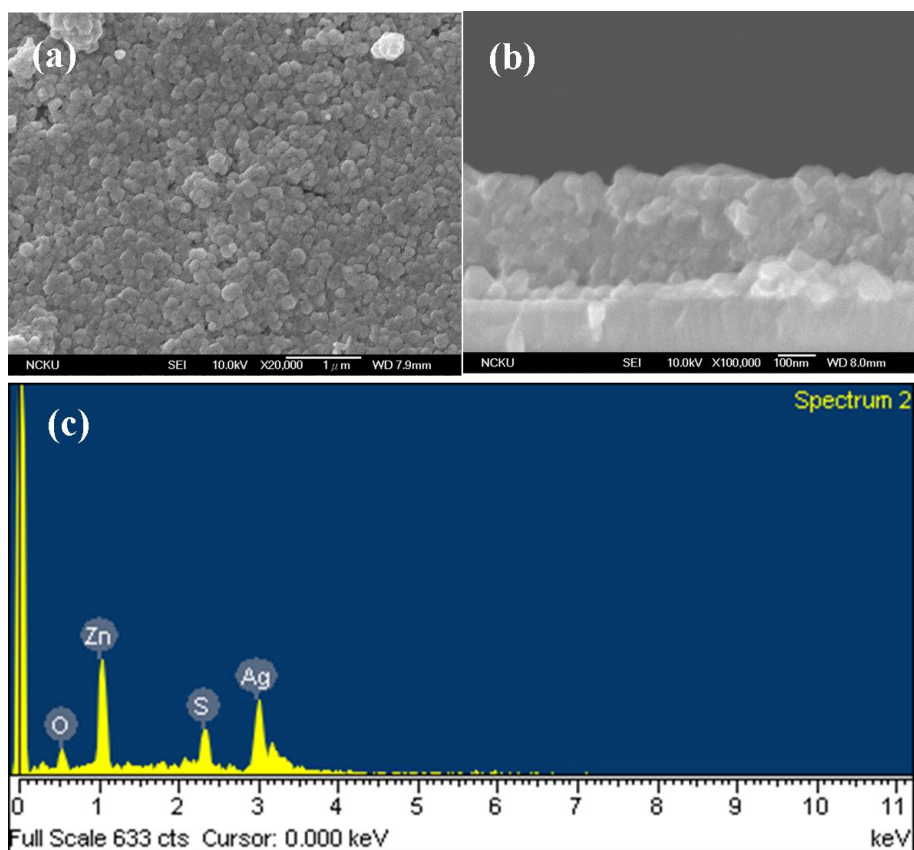


Fig. S3 (a) Top- and (b) cross-sectional SEM images of Ag₂S NPs formed on ZnO film by an ultrasound irradiation power of 12 W for 30 min. (c) EDS spectrum of Ag₂S NP/ZnO Film. The ratio of Ag:S is 2:1 in (c).

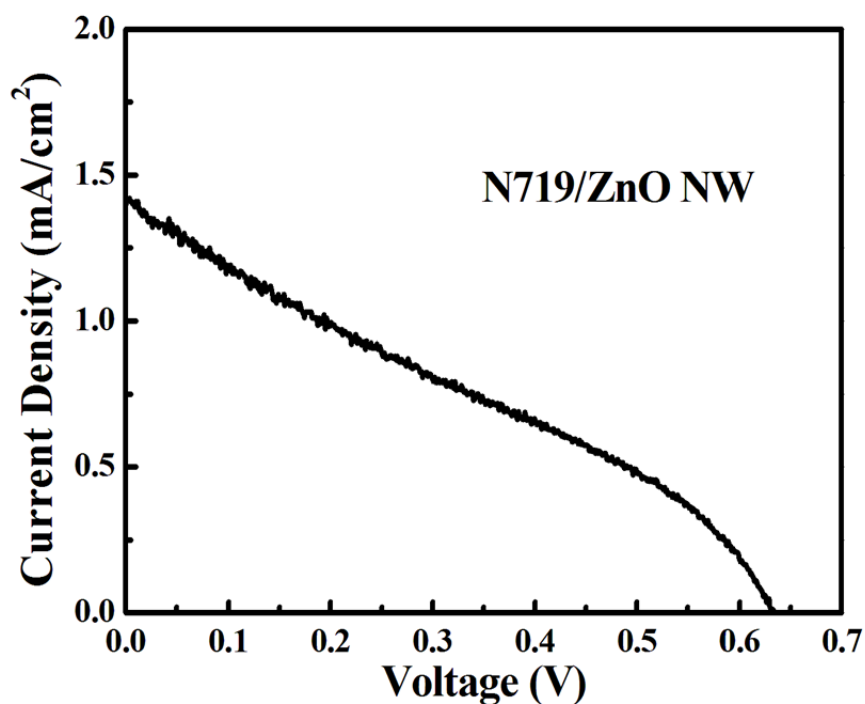


Fig. S4 J- V curve of N719-sensitized ZnO NW. J_{sc} , V_{oc} , FF and η of the cell are 1.43 mAcm⁻², 0.63 V, 0.30 and 0.27%, respectively. Dye adsorption was carried out by immersion ~ 3 μ m-thick ZnO NW array in a 0.1 mM ethanolic solution of N719 dye (RuL₂(NCS)₂:2TBA; L = 2,2'-bipyridyl-4,4'-dicarboxylic acid and TBA = tetrabutylammonium, Solaronix SA) at 70°C for 12 h. The sensitized electrode and platinized FTO counter electrodes were sandwiched together with 25 μ m thick hot-melt spacers. The liquid electrolyte solution, composed of 0.1 M LiI (ProChem), 50 mM I₂, 0.5 M 4-tertbutylpyridine (Aldrich) and 0.6 M 1-propyl-2,3-dimethylimidazolium (Solaronix SA) in 3-methoxypropionitrile (Fluka), was introduced between the photoanode and counter electrode by capillary action.