Electronic Supplementary Material (ESI) for RSC Advances.
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ESI I experimental setup for measurements of photoresponsive properties of $Bi_2S_3$ - CdS thin films

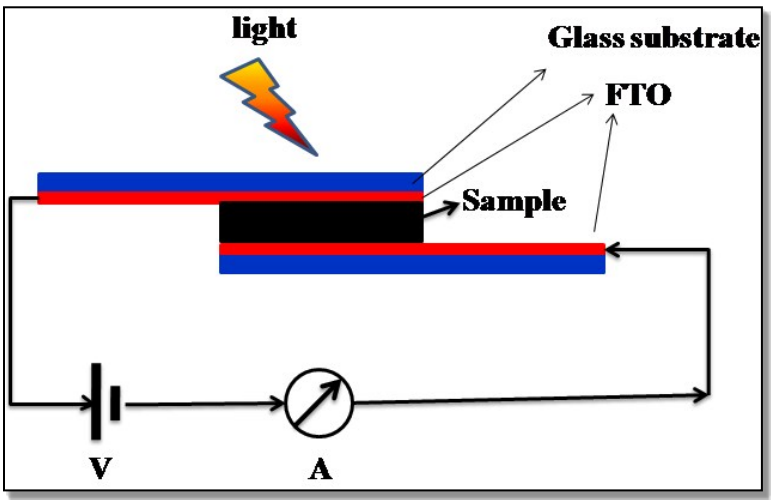


Figure SI experimental setup for measurements of photoresponsive properties of $Bi_2S_3$ - CdS thin films

ESI II Plote of Kubelka–Munk function (F(R)) Vs Photon energy (hν)

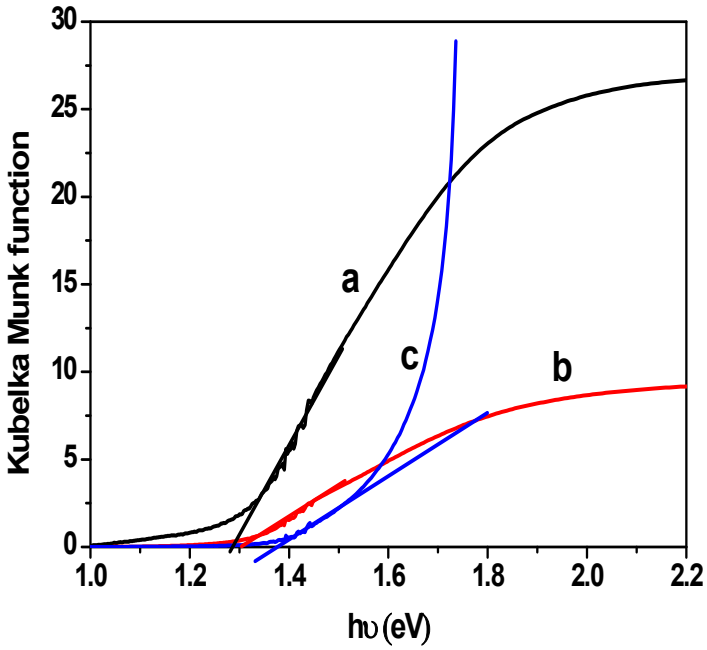


Figure SII Plote of Kubelka–Munk function (F(R)) Vs Photon energy (hν)

ESI III Reusability of $Bi_2S_3$ NWs decorated with CdS nanoparticles using 0.01 mole of $Cd(NO_3)_2$

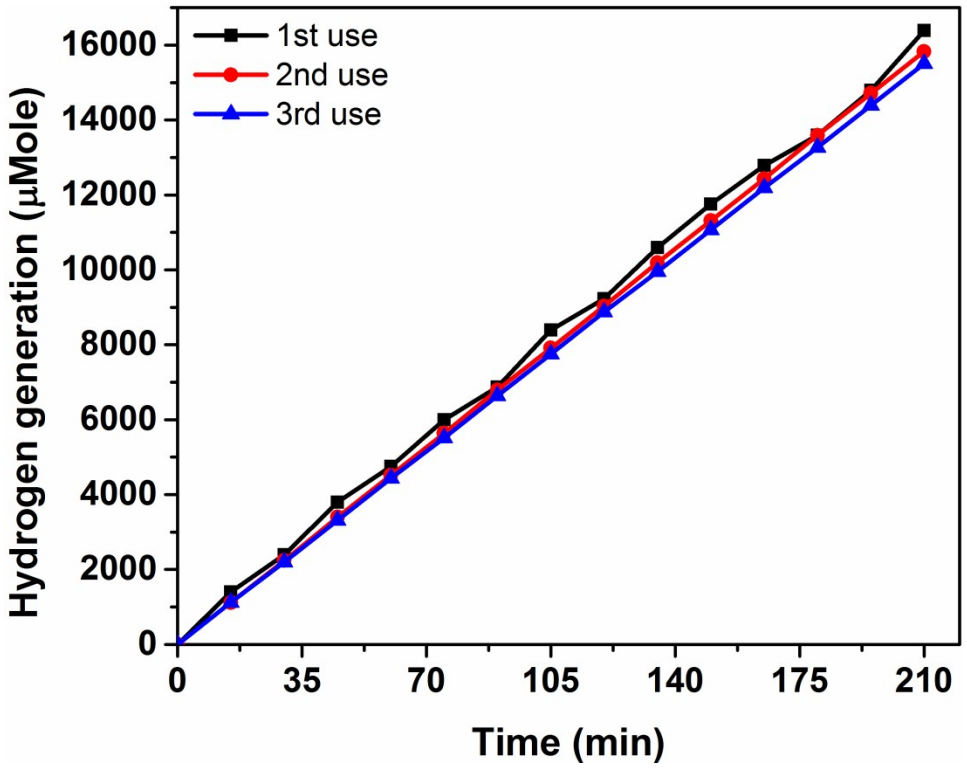


Figure SIII Reusability of $Bi_2S_3$ NWs decorated with CdS nanoparticles using 0.01 mole of $Cd(NO_3)_2$ via $H_2S$ splitting

Table S1 Hydrogen generation rate for $Bi_2S_3$ NWs decorated with CdS nanoparticles using 0.01 mole of $Cd(NO_3)_2$

| Reuse | Hydrogen generation rate (µMole/hr/0.5gm) |
|---|---|
| First time | 4560 |
| Second time | 4528 |
| Third time | 4428 |

ESI IV Temporal evolution of the absorption spectra of an MB aqueous solution catalysed by the $Bi_2S_3$ NWs (a) and $Bi_2S_3$ NWs decorated with CdS (b) under visible light irradiation (λ>400 nm)

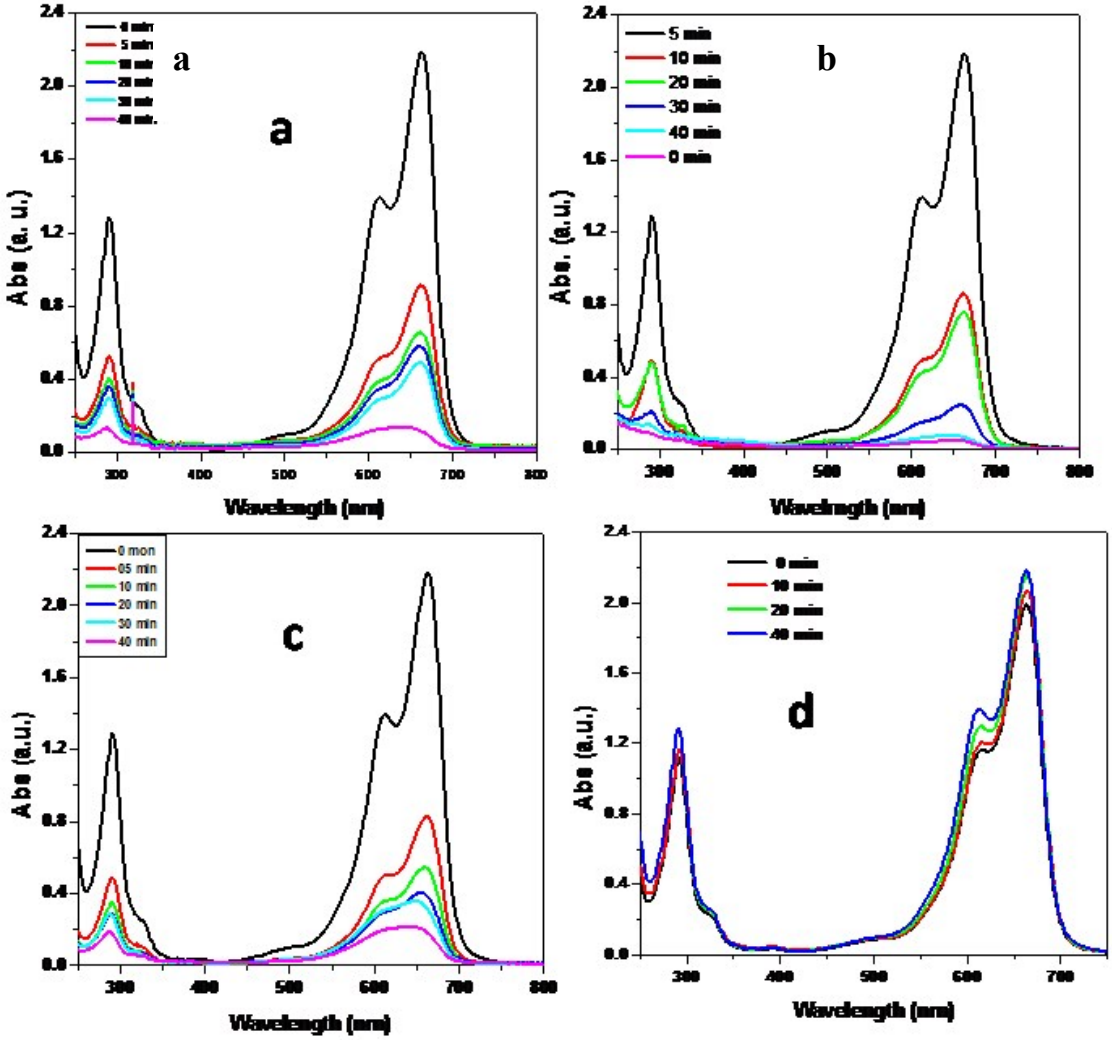


Figure SIV Photocatalytic degradation of MB (initial concentration 1.0 $X10^{-5}$ M) using $Bi_2S_3$ NW decorated with CdS using 0.01 mole of $Cd(NO_3)_2$(a), $Bi_2S_3$ NW decorated with CdS using 0.02 mole of $Cd(NO_3)_2$ (b), $Bi_2S_3$ NW (c) and without catalyst .