

Supporting Information

Fabrication of $\text{Bi}_2\text{S}_3/\text{ZnO}$ heterostructures: An excellent photocatalyst for visible-light-driven hydrogen generation and photoelectrochemical properties

Susmita Bera, Srabanti Ghosh, Rajendra N. Basu

CSIR-Central Glass and Ceramic Research Institute,
196, Raja S.C. Mullick Road, Kolkata- 700032, India

E-mail: ghosh.srabanti@gmail.com, rnbasu@cgcri.res.in

List of experiments:

Fig. S1. XRD patterns of $\text{M-Bi}_2\text{S}_3$ at three different reaction times as 10 hours, 16 hours and 24 hours.

Fig. S2. TEM image of ZnO nanoparticles.

Fig. S3. N_2 adsorption-desorption isotherm of bare $\text{M-Bi}_2\text{S}_3$ and $\text{M-Bi}_2\text{S}_3/\text{ZnO}$ heterostructure.

Fig. S4. Photocatalytic MO degradation in presence of catalyst, bare semiconductors $\text{L-Bi}_2\text{S}_3$, $\text{M-Bi}_2\text{S}_3$ and heterostructure $\text{L-Bi}_2\text{S}_3/\text{ZnO}$, $\text{M-Bi}_2\text{S}_3/\text{ZnO}$ under UV light irradiation.

Fig. S5. Current-Voltage curve of bare $\text{M-Bi}_2\text{S}_3$ and (b) $\text{M-Bi}_2\text{S}_3/\text{ZnO}$ heterostructure without light (dark) and with irradiation at a fixed bias voltage of 500 mV.

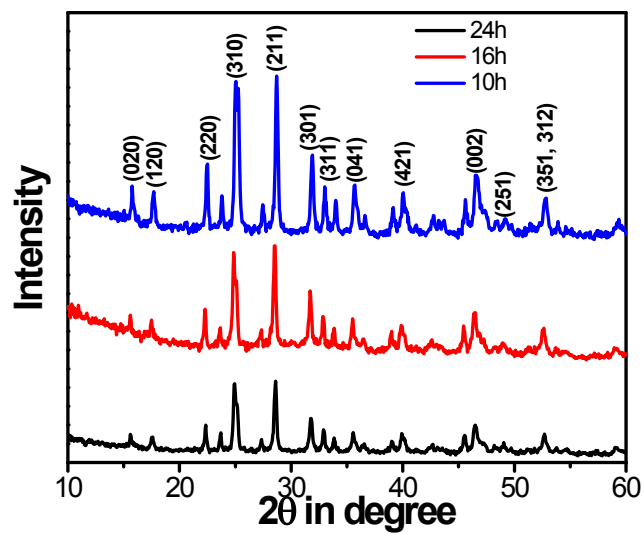


Fig. S1 XRD patterns of M-Bi₂S₃ at three different reaction times as 10 hours, 16 hours and 24 hours.

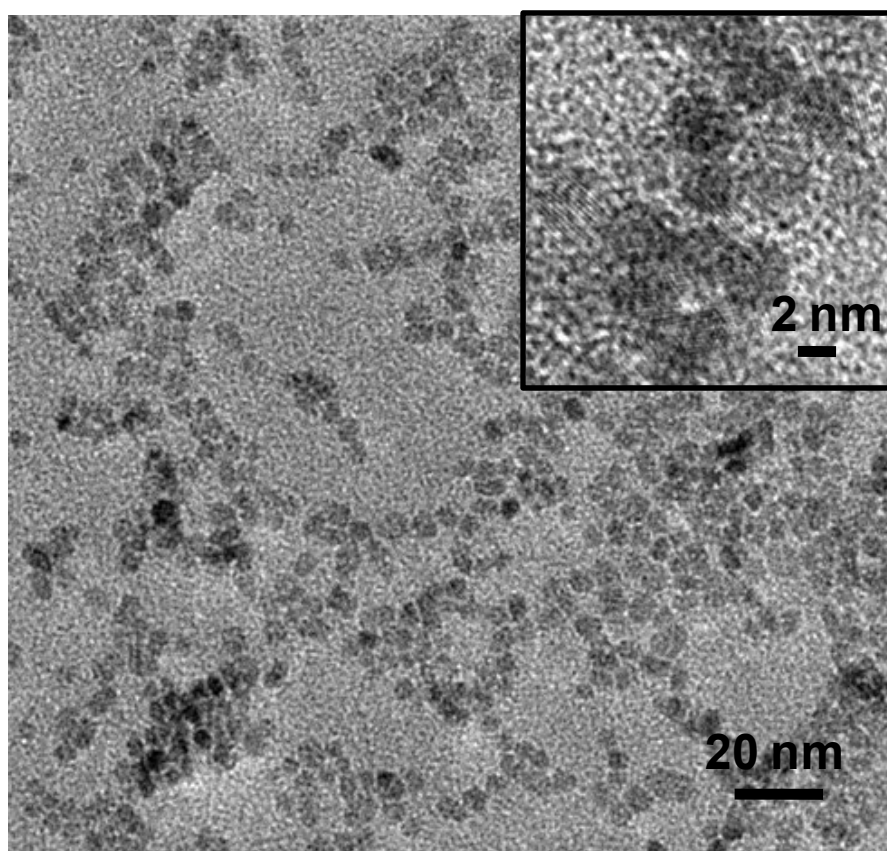


Fig. S2 TEM image of ZnO nanoparticles.

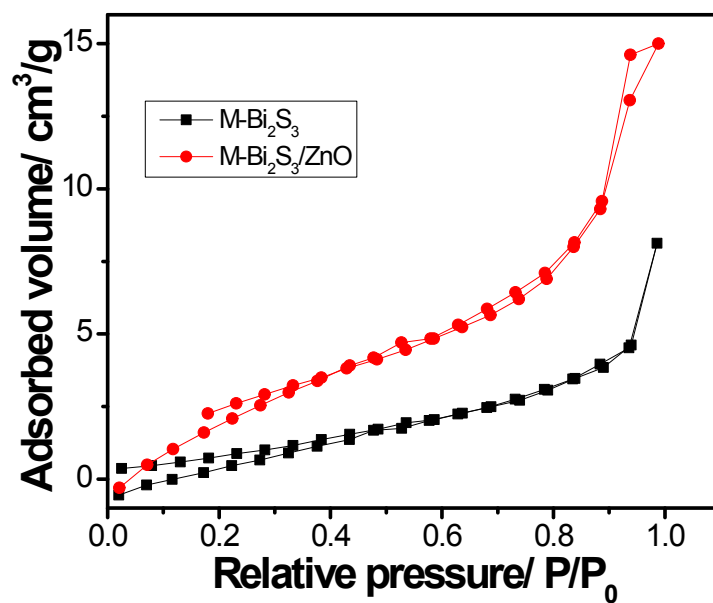


Fig. S3 N₂ adsorption-desorption isotherm of bare M-Bi₂S₃ and M-Bi₂S₃/ZnO heterostructure.

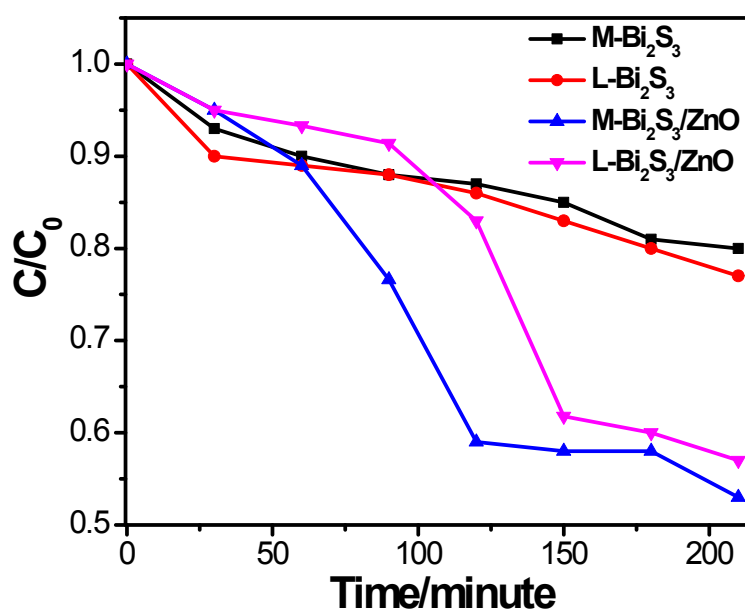


Fig. S4 Photocatalytic MO degradation in presence of catalyst, bare semiconductors L-Bi₂S₃, M-Bi₂S₃ and heterostructure L-Bi₂S₃/ZnO, M-Bi₂S₃/ZnO under UV light irradiation.

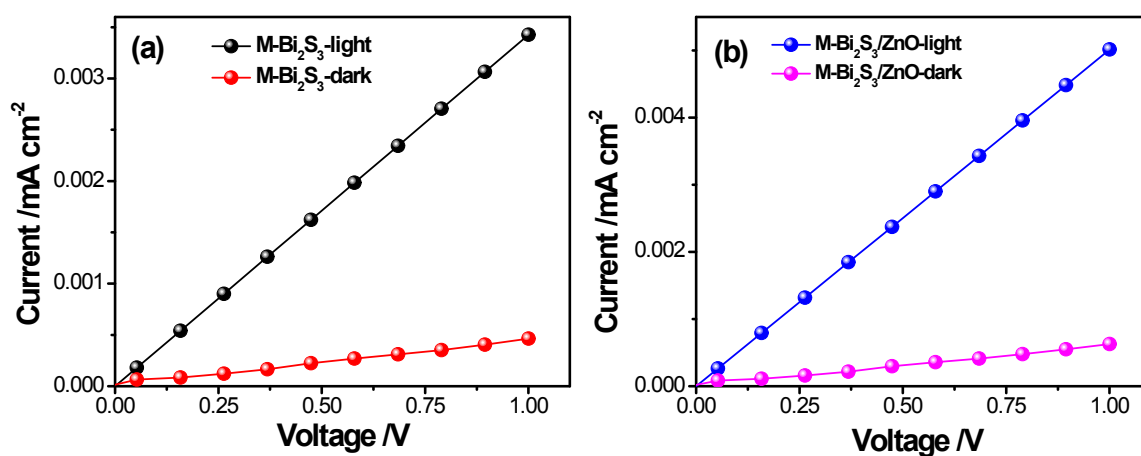


Fig. S5 Current-Voltage curve of bare M-Bi₂S₃ and (b) heterostructure M-Bi₂S₃/ZnO without light (dark) and with irradiation at a fixed bias voltage of 500 mV.