Visible Light Driven Photocatalytic Properties of Binary MoS$_2$/ZnS Heterostructured Nanojunctons Synthesized Via One-Step Hydrothermal Route

Mega Joy$^a$, A. Peer Mohamed$^a$, K.G.K. Warrier$^a$ and U. S. Hareesh$^a$

**Fig. S1** FFT of a) ZnS, b) MoS$_2$ and c) SAED of MoS$_2$/ZnS nanojunctions
**Fig. S2** DRS of MoS$_2$

**Fig. S3** a) photographs a) initial MG solution, b) completely degraded solution and c) residue obtained after the reaction desorbed with ethanol.
Fig. S4 Mass normalized photoluminescence emission spectra of ZnS, MoS$_2$ and MoS$_2$/ZnS heterostructures at room temperature.
**Fig. S5** Rate of photocatalytic degradation of MG over the synthesized ZnS and MoS$_2$/ZnS heterostructures.

![Graph showing the rate of photocatalytic degradation of MG.](image)

**Fig. S6** Repeated malachite green degradation kinetics with 30–wt% MoS$_2$/ZnS photocatalyst.

![Graph showing repeated degradation kinetics of malachite green.](image)

**Fig. S7** Photocatalytic degradation of para nitro phenol with ZnS and 30-wt% MoS$_2$/ZnS.

![Graph showing photocatalytic degradation of para nitro phenol.](image)