

Supporting Information for

Hierarchical CdS Nanostructure by Lawesson's Reagent and its Enhanced Photocatalytic Hydrogen Production

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S1 : Photoreaction Set up

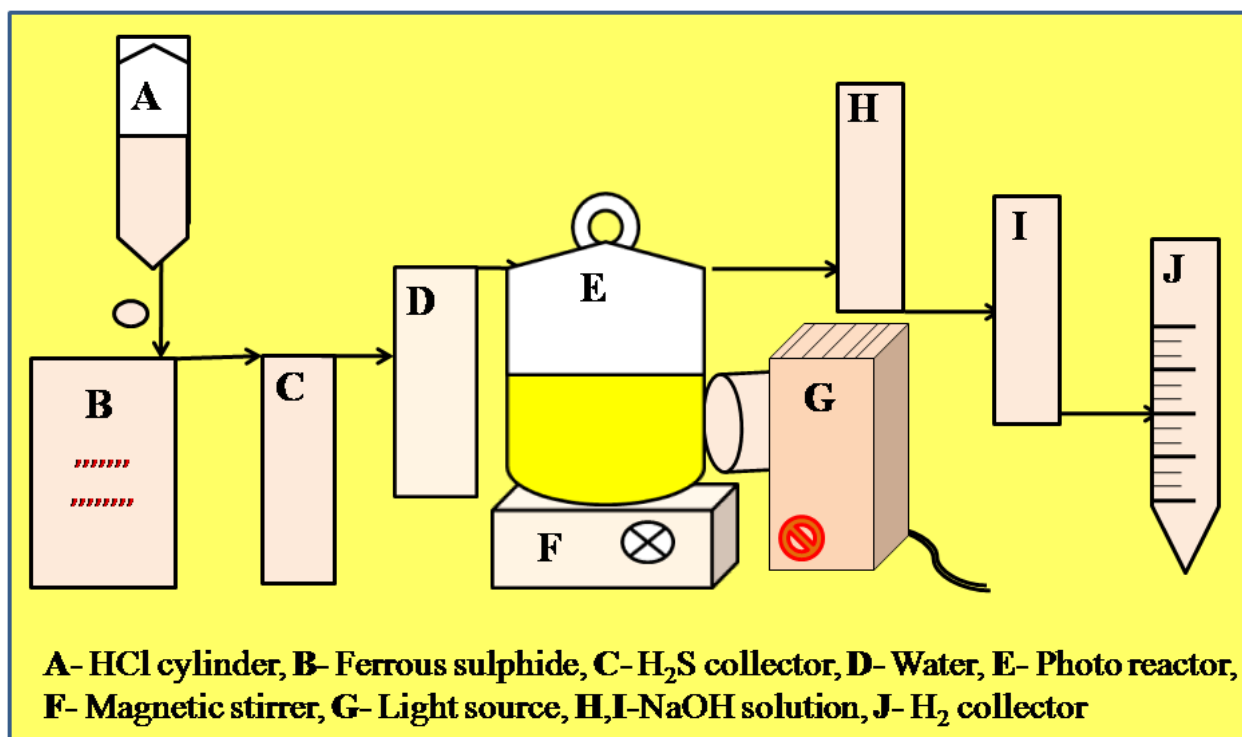


Fig. S1 Schematic representation of H₂S splitting setup.

S2 : TEM of the CdS Nanostructures

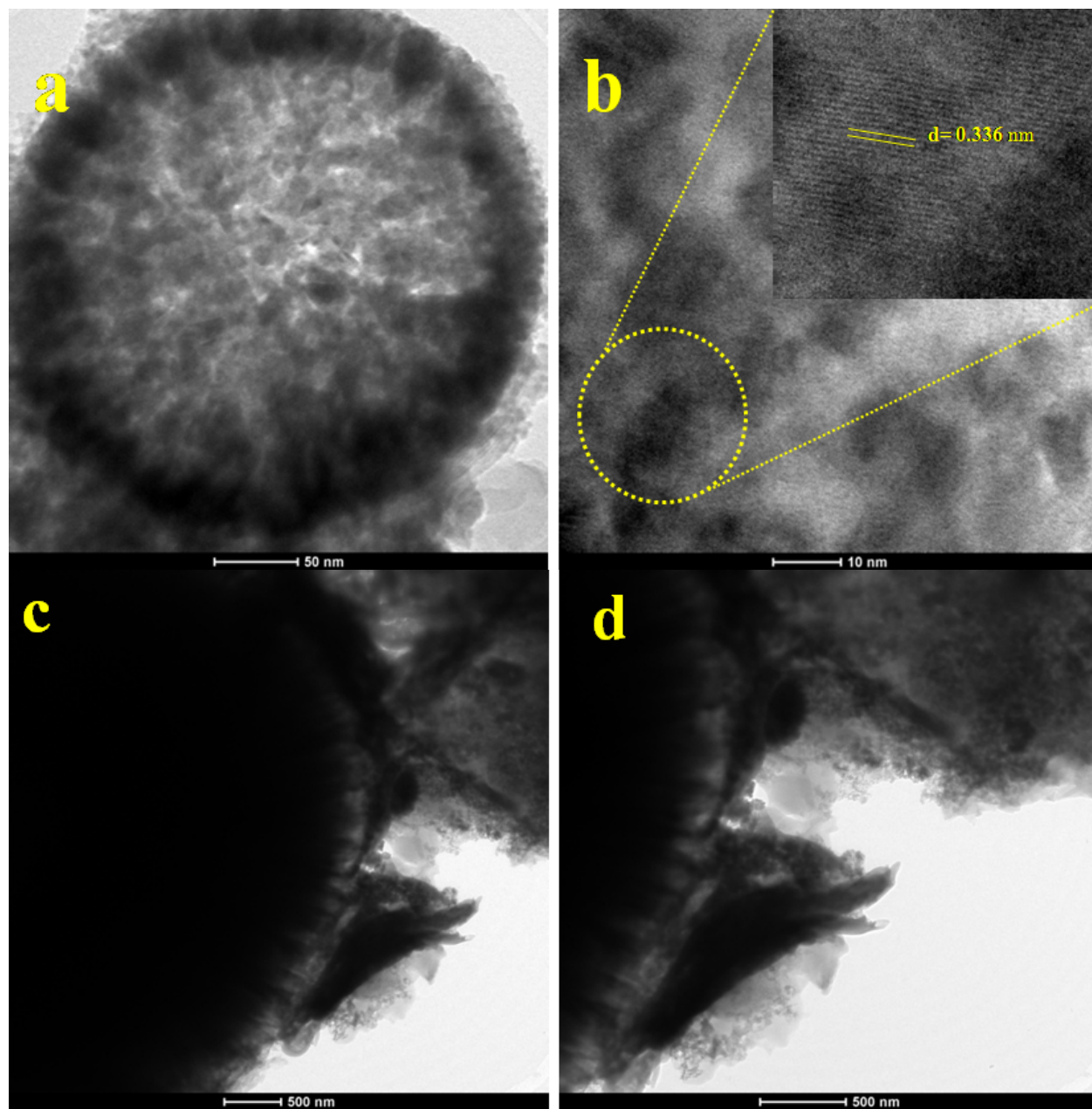
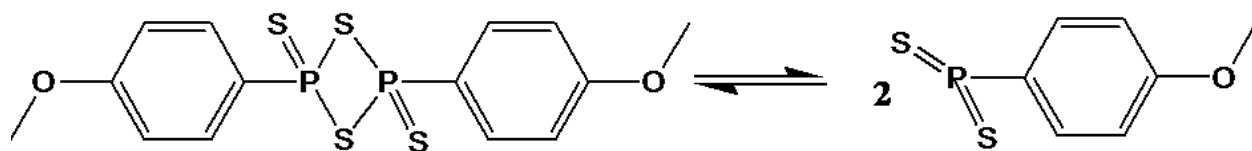


Fig. S2. TEM images a, b) CdS nanostructures and c, d) Pt loaded CdS nanostructures.

Scheme S1: Reaction mechanism



Scheme S1. Formation mechanism for monomer (B).

S3 : NMR of products

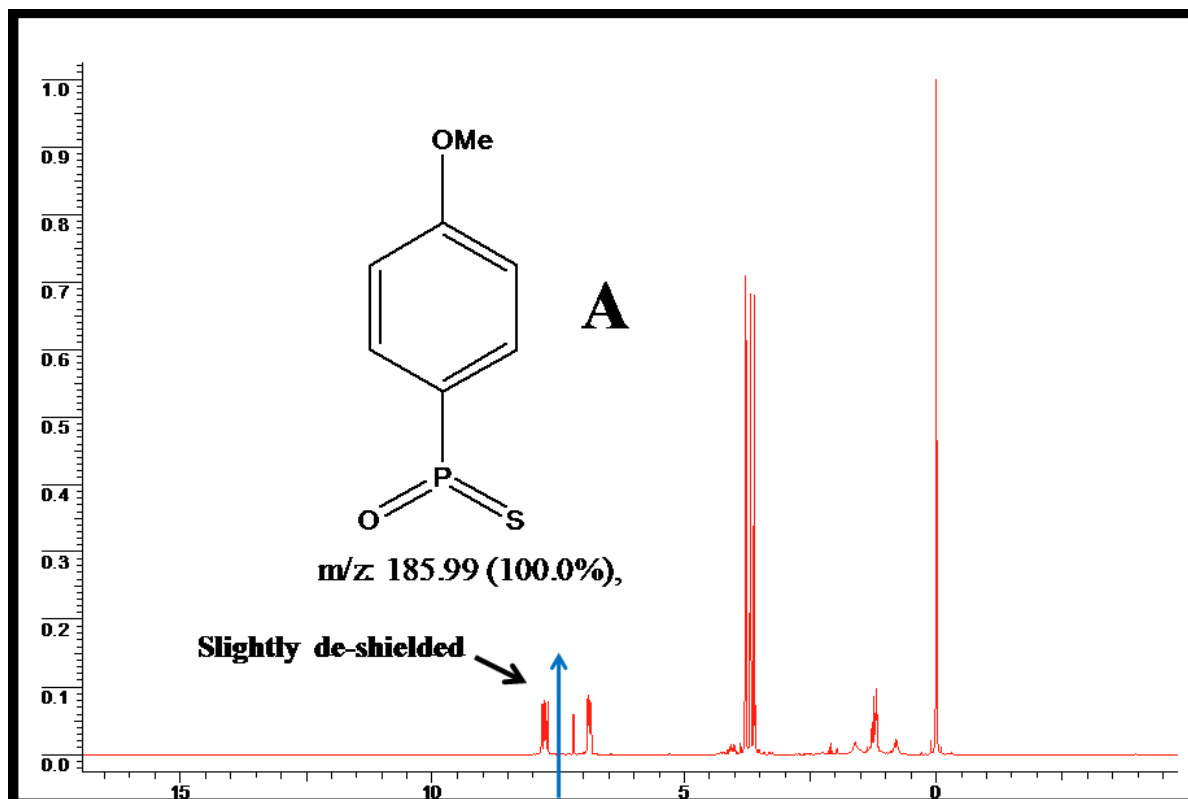


Fig. S3 ^1H NMR spectrum for side product (A).

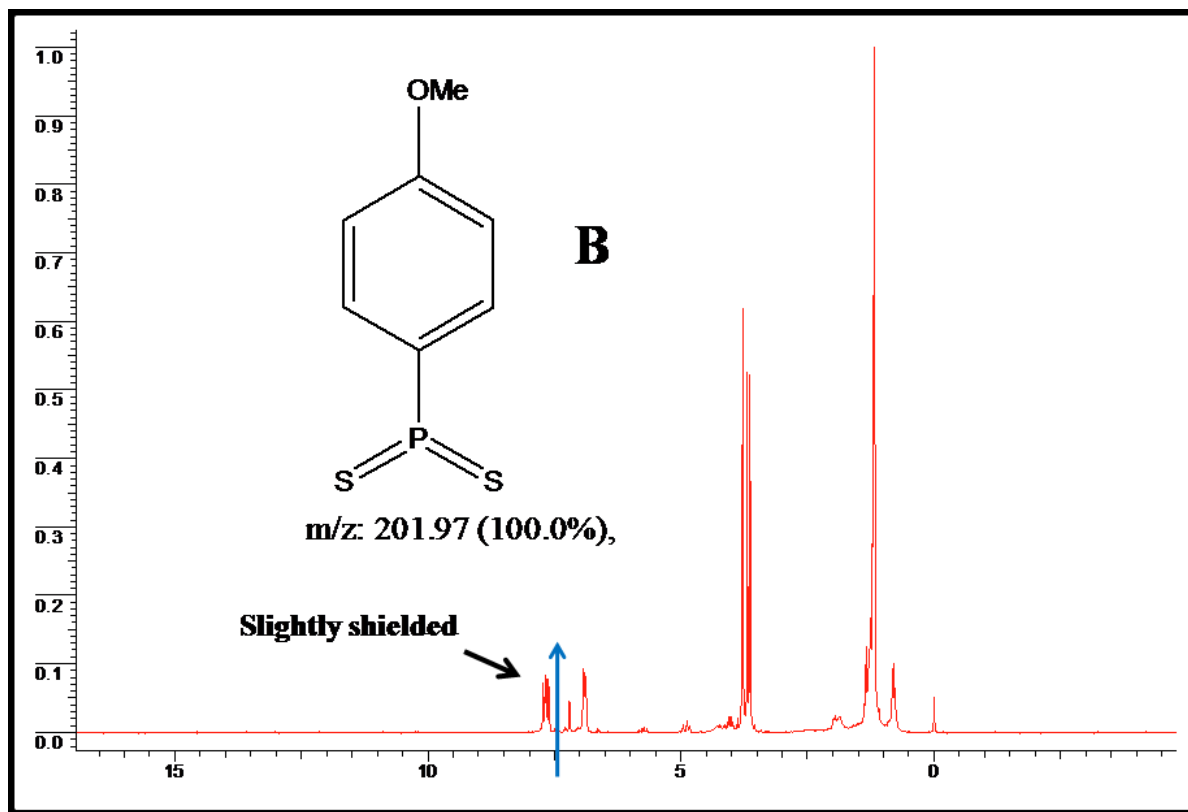


Fig. S4 ^1H NMR spectrum for side product (B).

Table S1 Comparison of CdS nanostructures with the earlier reports for H₂ generation from H₂S

Photocatalyst	Amount of Photocatalyst [gram]	Amount of H₂ generation [μmol/h/g]	Reference No.
CdIn ₂ S ₄	0.5	3,480.00	17
CdS	0.5	5,898.00	18
CdS _{0.5} Se _{0.5} /CdSe	1.0	8,164.53	19
Bi-GeO ₂	1.0	11,541.00	21
CdS-GeO ₂	0.5	7,560.00	22
ZnIn ₂ S ₄	0.5	5287.00	23
ZnS	1.0	2050.00	24
CdS-Glass	1.0	3,570.00	25
N-TiO ₂	1.0	8800.00	26
CdS	0.1	14,136.00	Present Work

Table S2 Recycle study of CdS nanostructures for H₂ generation from H₂S

Sr. No.	No. of Cycle	H ₂ production in $\mu\text{mol/h/gm}$
1	1 st run	14,136
2	2 nd run	13,824
3	3 rd run	13,589