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## Nanoengineered CdSe quantum dots-Montmorillonite composites: An efficient photocatalyst under visible light irradiation

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Figure S1: Chemical structure of Indigo Carmine (IC)



**Figure S2:** Photocatalytic reactor used for degradation of IC.



## **Figure S3:** FE-SEM images of 10%-CdSe-CTAB-MMT



Figure S4: Effect of pH on IC decolourisation at by 10%-CdSe-CTAB-MMT: { $[IC]_{ini} = 100 \text{ mg} \text{ L}^{-1}$ ; [Nanocomposite] = 1 g L<sup>-1</sup>, at 25°C}.



**Figure S5:** HPLC chromatogram of the intermediates formed during degradation of IC in presence of (a) D.O. (without quencher) (b) BQ and (c) AA {extracted at 300 nm;  $[IC]_{ini} = 100$  mg L<sup>-1</sup>, [10%-CdSe-CTAB-MMT] = 1 g L<sup>-1</sup>}.





**Figure S6:** MS of IC and its metabolites generated after the degradation with 10%-CdSe-CTAB-MMT.



Figure S7: XRD and TEM analysis of (a) fresh and (b) recovered 10%-CdSe-CTAB-MMT.

**Figure S8:** Antibacterial activity of IC and degraded IC against (a) *B.subtilis* (b) *S.aureus* and (c) *E.coli*.



Metabolite	%ABS*	Vol.	TPSA	NROTB	HBA	HBD	log P	FW	DLS
IC	46.86	297.37	180.12	2	10	2	-2.41	420.38	-0.64
IB	86.32	223.96	65.72	0	4	2	2.90	262.27	-0.33
Ι	91.77	123.57	49.93	0	3	1	0.83	147.13	-1.37
II	87.15	122.33	63.32	1	3	3	1.46	137.14	-0.62
III	87.24	132.56	63.07	0	4	1	0.73	163.13	-1.41
IV	91.25	207.78	51.45	0	4	0	2.61	248.24	0.11

**Table T1:** Calculated absorption (%ABS), polar surface area (PSA) and Lipinski parameters for

 IC and its metabolites.

\*The degree of absorption (%ABS) is calculated as: %ABS =  $109 - (0.345 \times TPSA)$ .