

1 **Supplementary Material**

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3 **Highly recyclable and stable CdS-alginate hydrogel beads towards prevention of oxidative**
4 **release of nanoparticles in complete photocatalytic disinfection of multidrug-resistant**
5 ***Escherichia coli***

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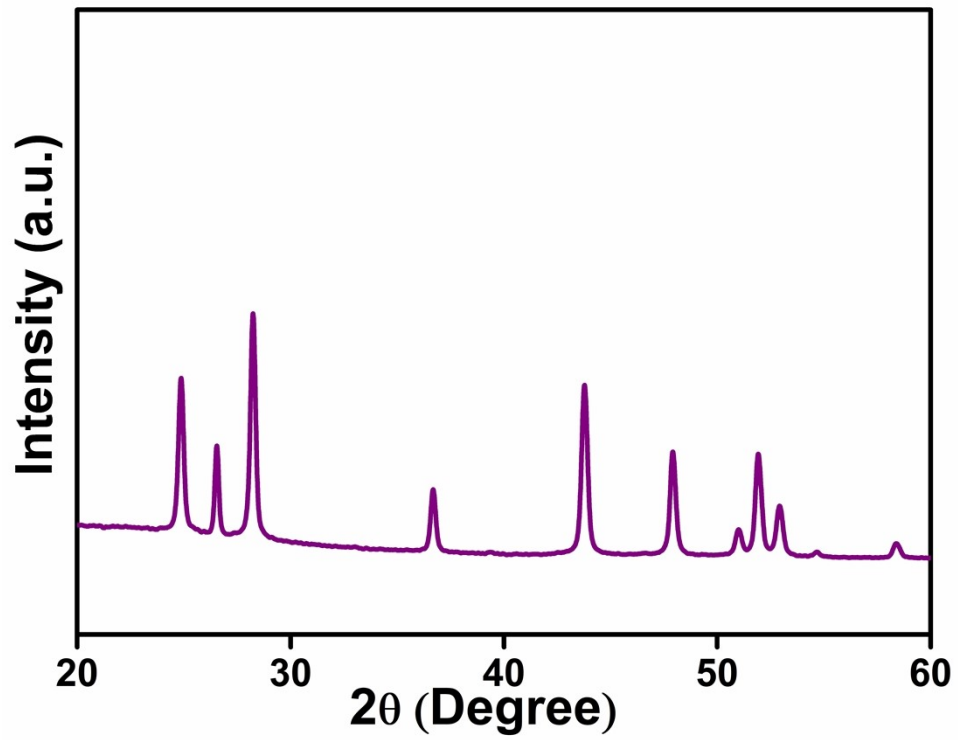
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Fig. 1S. X-ray diffraction peaks of the prepared CdS nanorods

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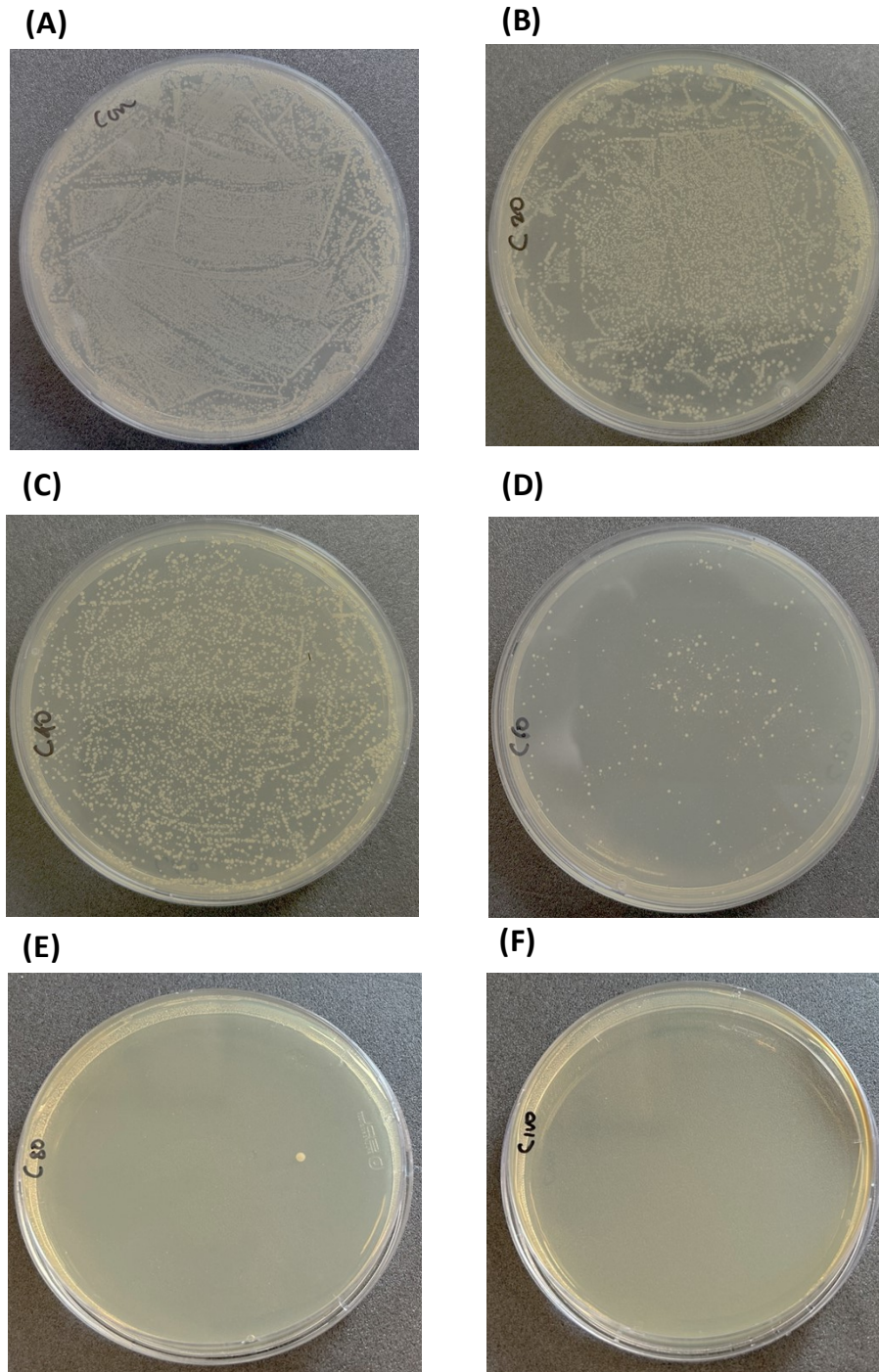


Fig. 2S. Bacterial disinfection efficiency using photocatalysis by CdS-ABs (20 %)

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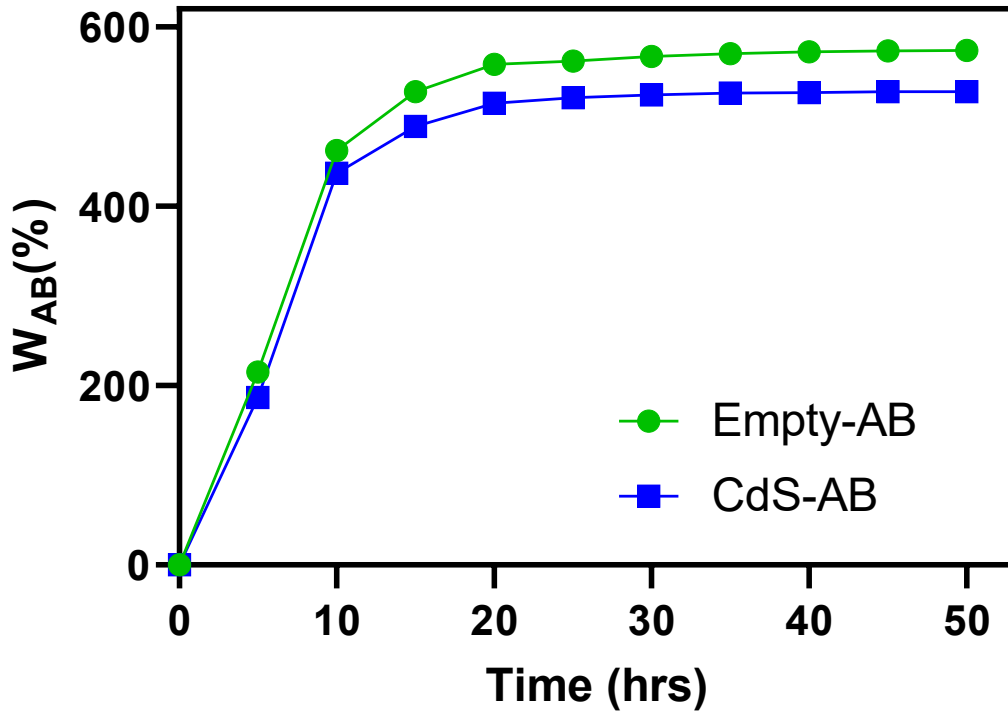
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Fig. 3S. The hydrogel bead's swelling behavior with the increase in time

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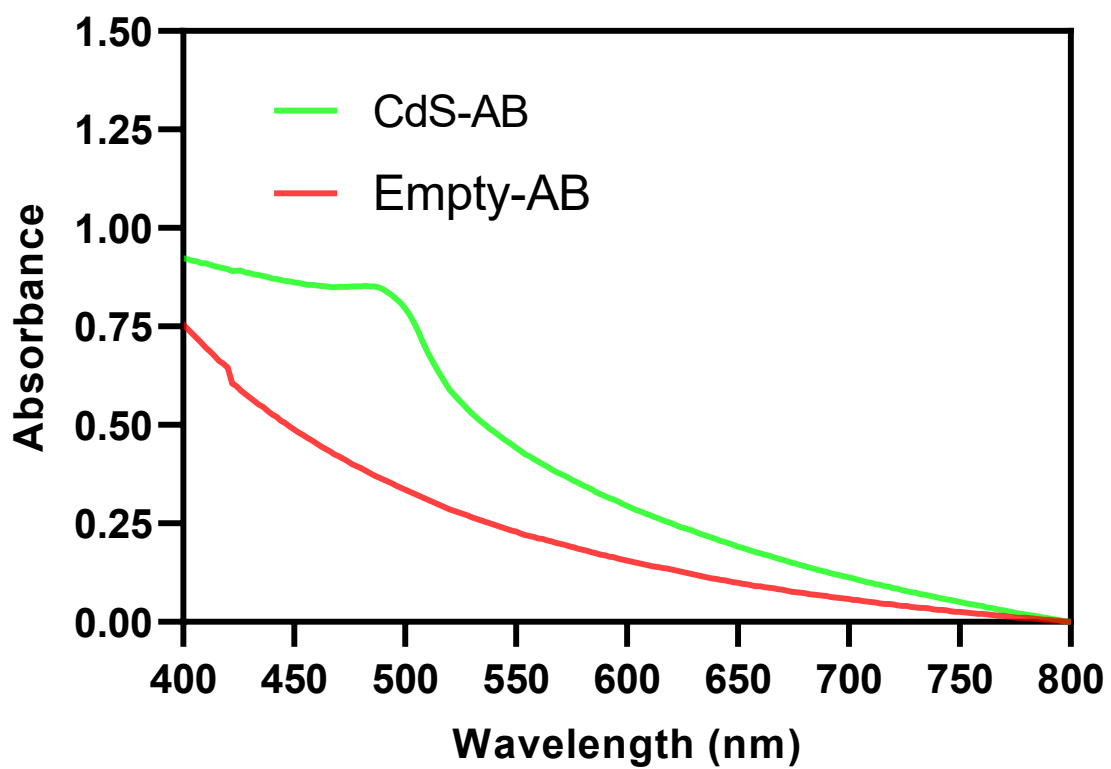
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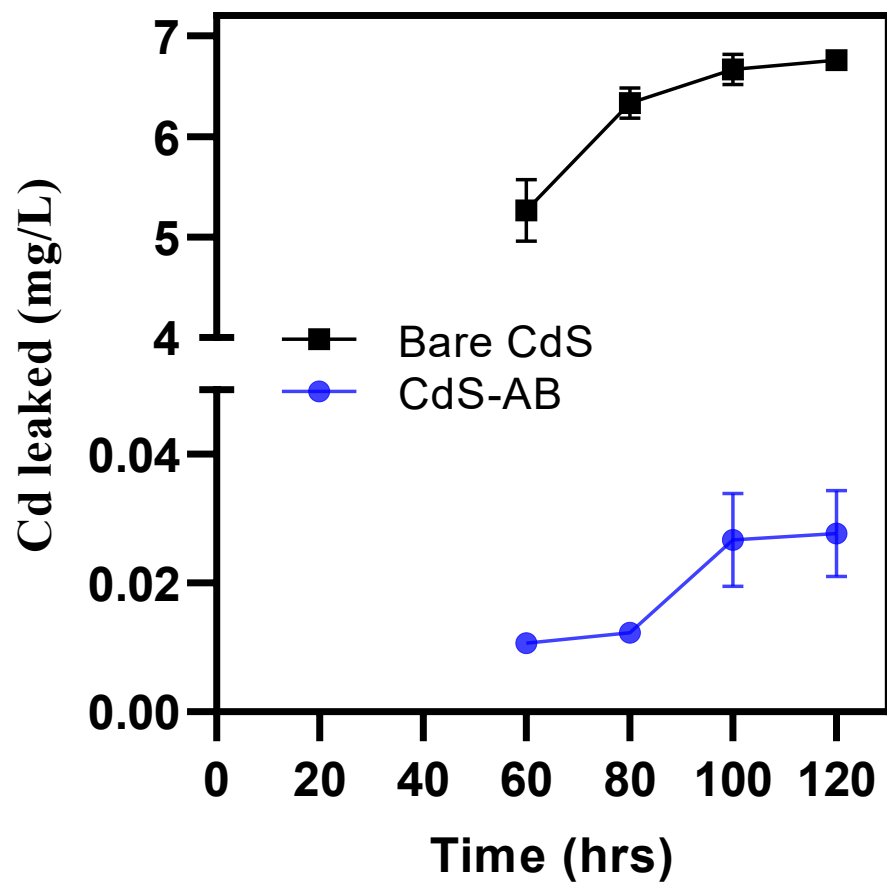
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Fig. 4S. Absorbance peak is observed for the CdS-AB at ~480 nm.



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Fig. 5S. Cd ions leaked from Bare CdS NPs and encapsulated CdS-AB with respect to disinfection treatment time