

Supplementary Information

Preparation of high efficiency low toxicity CdS/C₆₀ bactericide and investigation of mechanism

Xiufang Wei^a, Yao Zhao^a, Shaohua Zeng^{b,c}, Wangyan Nie^{b,c}, Yifeng Zhou^{b,c}, Ying Xu^{a,c,*} and Pengpeng Chen^{b,c*}

^a School of Material Science and Engineering, Anhui University, Hefei, 230601, China

^b College of Chemistry and Chemical Engineering, Anhui University, Hefei, 230601, China

^c Anhui Province Key Laboratory of Environmentally-friendly Polymer Materials, Hefei, 230601, China

* To whom correspondence should be addressed. Ying Xu (yingxu@ahu.edu.cn) and Pengpeng Chen (chenpp@ahu.edu.cn).

Contents

S1 Photos of agar plates of *S. aureus* treated with CdS/C₆₀ complex under darkness and illumination.

S2 Photos of agar plates of *E. coli* treated with CdS/C₆₀ complex under darkness and illumination.

S3 The particle size distribution of CdS and CdS/C₆₀-2.

S4 Sterilization kinetics curves of *E. coli* and *S. aureus* under different conditions

S5 The cumulative amount of dissolved Cd²⁺ of CdS and CdS/C₆₀-2 dispersed in normal saline under light conditions.

S6 Antibacterial effect of CdS/C₆₀-2 filtrate after light and Cd²⁺ solution on *S. aureus*.

S7 Photocurrent response curves of pure CdS and different C₆₀ load levels CdS/C₆₀

S1 Photos of agar plates of *S. aureus* treated with CdS/C₆₀ complex under darkness and illumination.

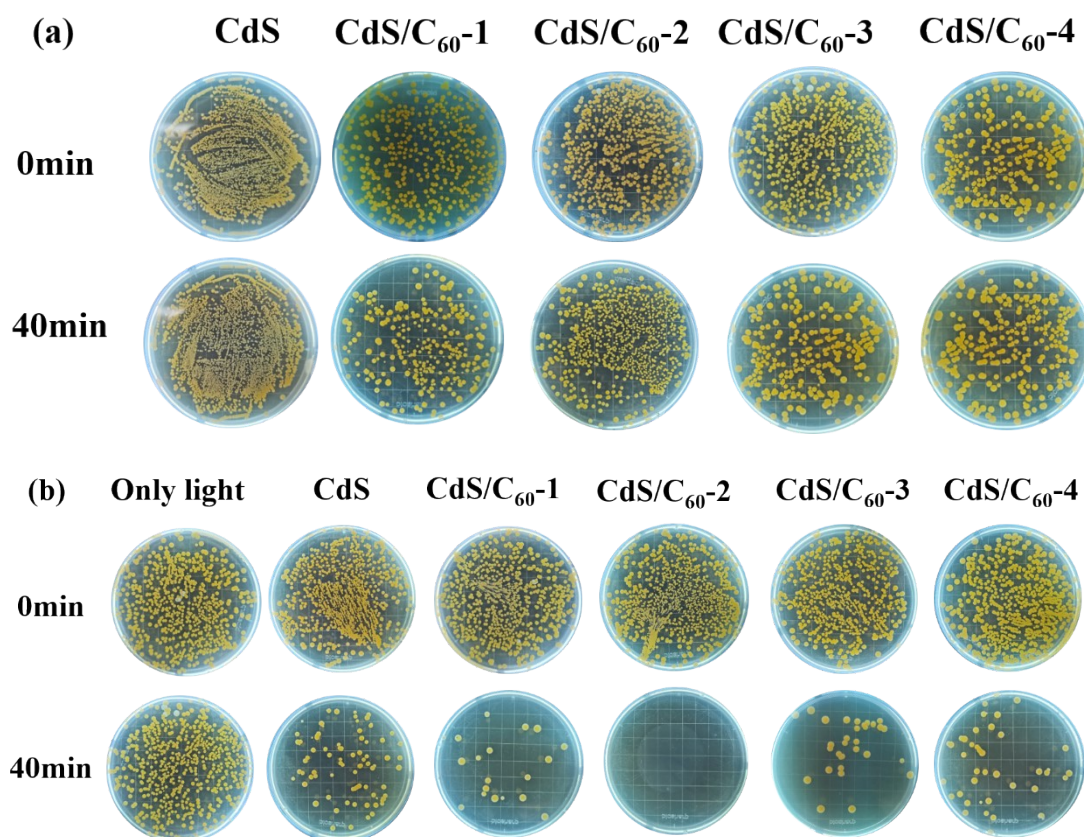


Figure S1. Photographs of the agar plates with CdS/C₆₀-1、 CdS/C₆₀-2、 CdS/C₆₀-3、 CdS/C₆₀-4 (100 μg/mL) was used to treat *S.aureus* (a) in the dark and (b) under 40 min illumination.

S2 Photos of agar plates of *E.coli* treated with CdS/C₆₀ complex under darkness and illumination.

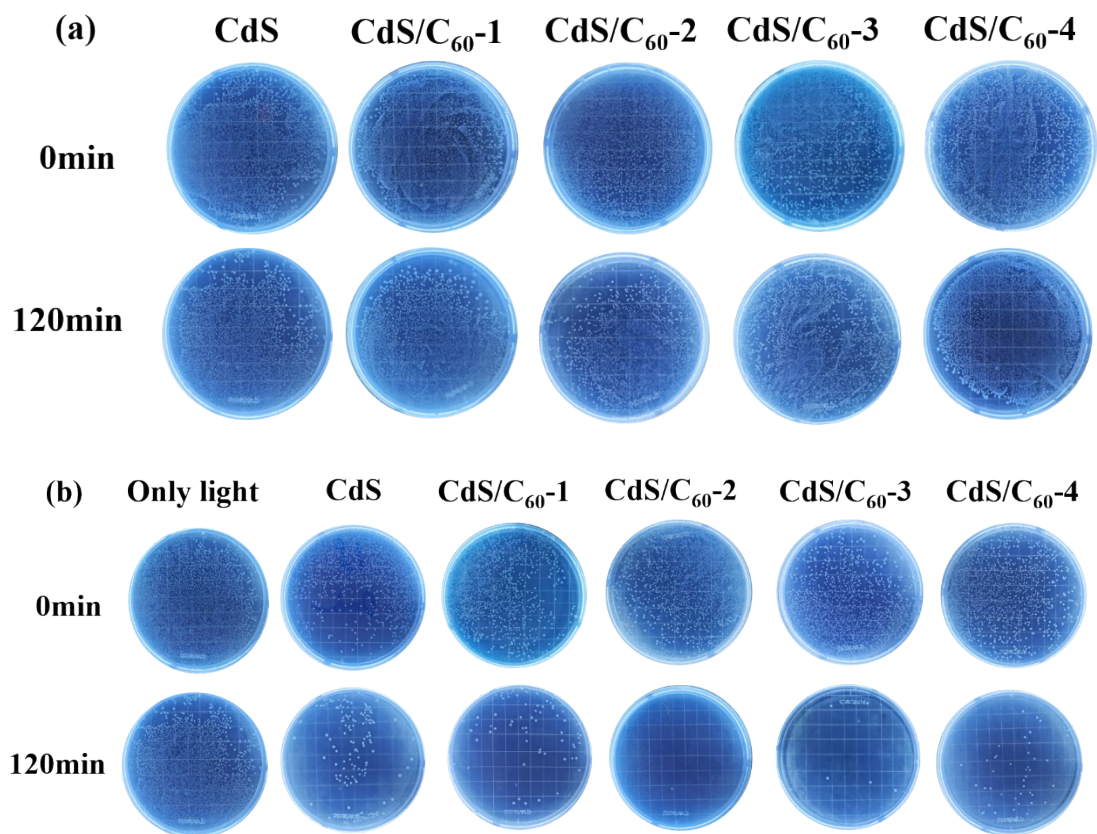


Figure S2. Photographs of the agar plates with CdS/C₆₀-1、 CdS/C₆₀-2、 CdS/C₆₀-3、 CdS/C₆₀-4 (100 μg/mL) was used to treat E.coli (a) in the dark and (b) under 120 min illumination.

S3 The particle size distribution of CdS and CdS/C₆₀-2.

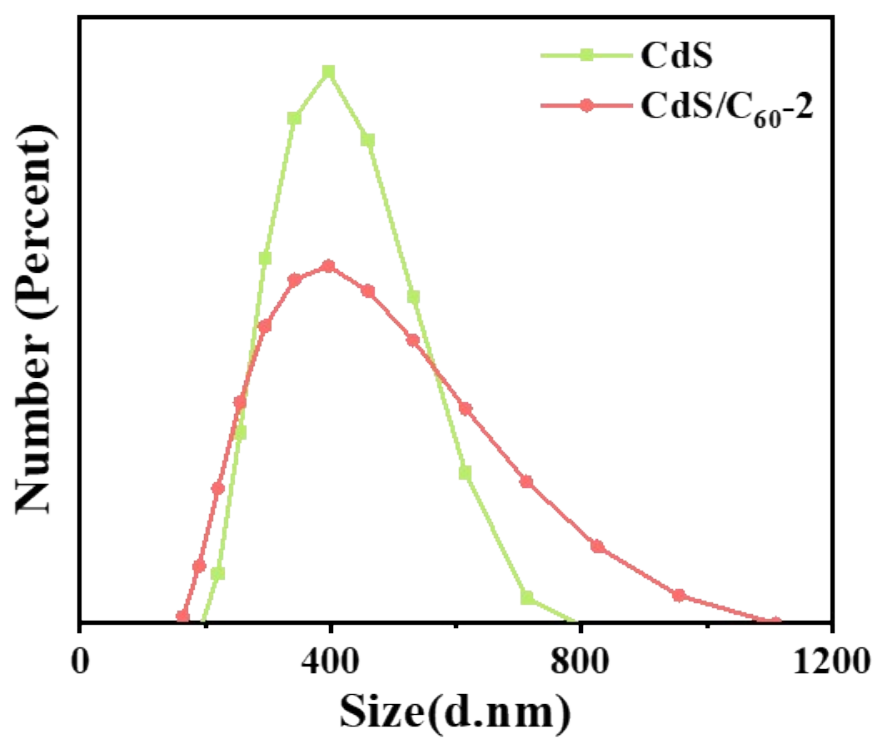


Figure S3. The particle size distribution of CdS and CdS/C₆₀-2.

S4 Sterilization kinetics curves of E.coli and S.aureus under different conditions

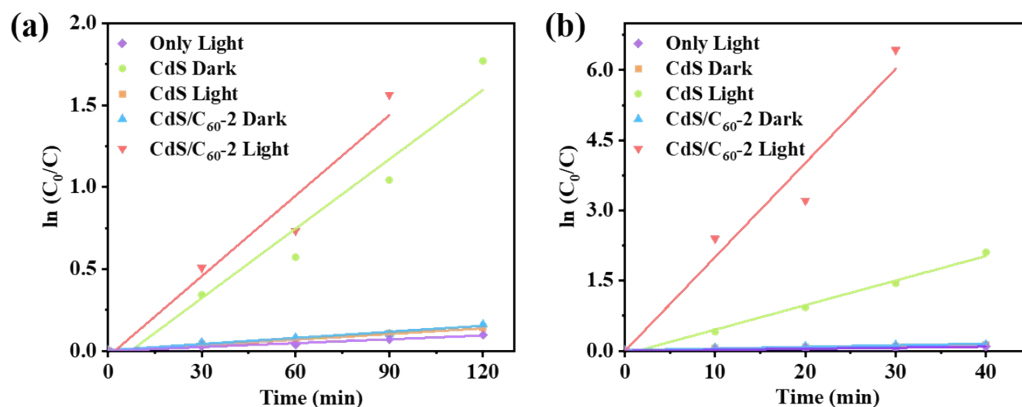


Figure S4. Sterilization kinetics curves of (a) E.coli (b) S.aureus under different conditions

S5 The cumulative amount of dissolved Cd²⁺ of CdS and CdS/C₆₀-2 dispersed in normal saline under light conditions.

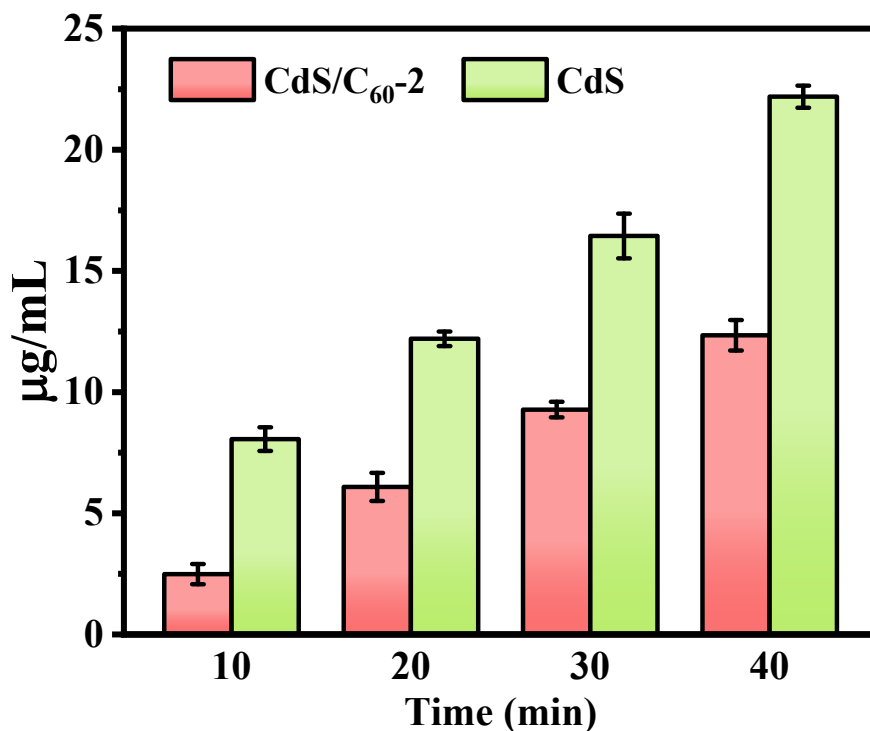


Figure S5. The cumulative amount of dissolved Cd²⁺ of CdS and CdS/C₆₀-2 dispersed in normal saline under light conditions.

S6 Antibacterial effect of CdS/C₆₀-2 filtrate after light and Cd²⁺ solution on S.aureus.

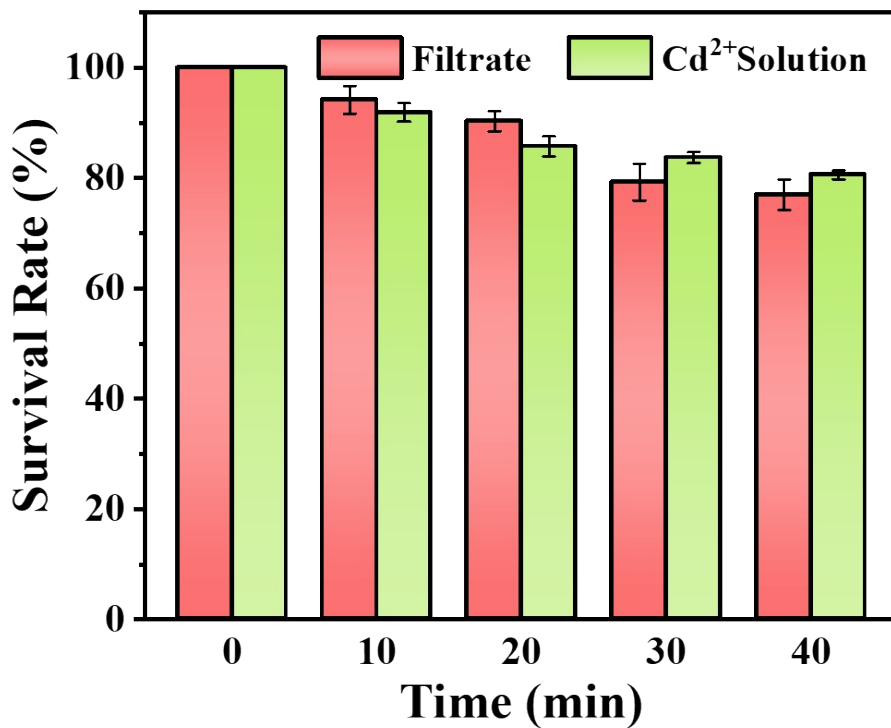


Figure S6. Antibacterial effect of CdS/C₆₀-2 filtrate after light and Cd²⁺ solution on S.aureus.

S7 Photocurrent response curves of pure CdS and different C₆₀ load levels CdS/C₆₀

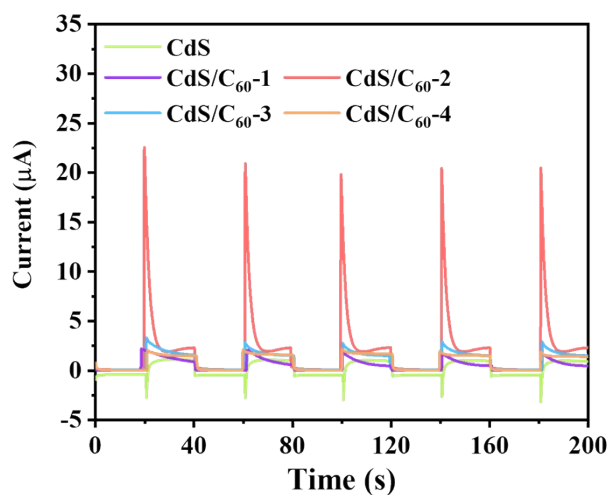


Figure S7. Photocurrent response curves of pure CdS and different C₆₀ load levels CdS/C₆₀