Supplementary Information

A light-switch for efficient decolorization of azo dye wastewater based on bacteria-semiconductors interaction

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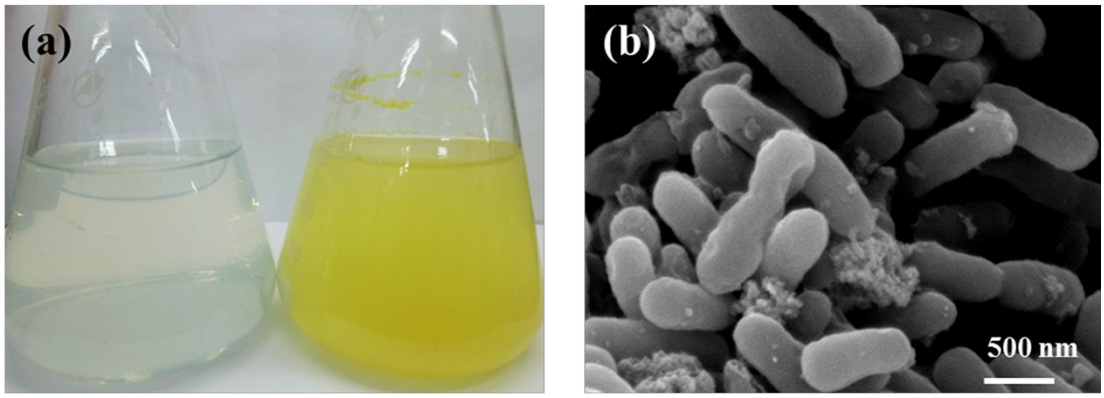

Fig.S1. (a) Appearances of chemical control without *S. oneidensis* MR-1 (left) and *S. oneidensis* MR-1/CdS suspensions (right). (b) SEM image of *S. oneidensis* MR-1/CdS.

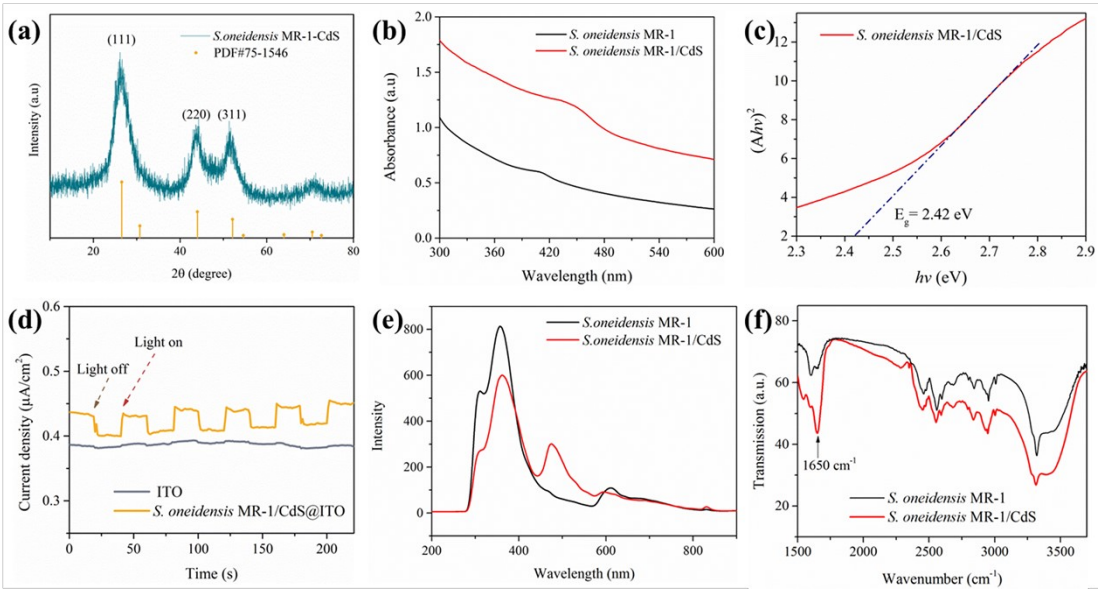

Fig.S2. (a) XRD partten of *S. oneidensis* MR-1-CdS before decolorization reaction. (b) UV-vis spectrum of *S. oneidensis* MR-1/CdS. (c) Bandgap calculation of *S. oneidensis* MR-1/CdS based on tauc plot. (d) I-t curves with a light on/off cycle. (e) Fluorescence spectra of *S. oneidensis* MR-1 and *S. oneidensis* MR-1/CdS. (f) FTIR spectra of *S. oneidensis* MR-1 and *S. oneidensis* MR-1/CdS.

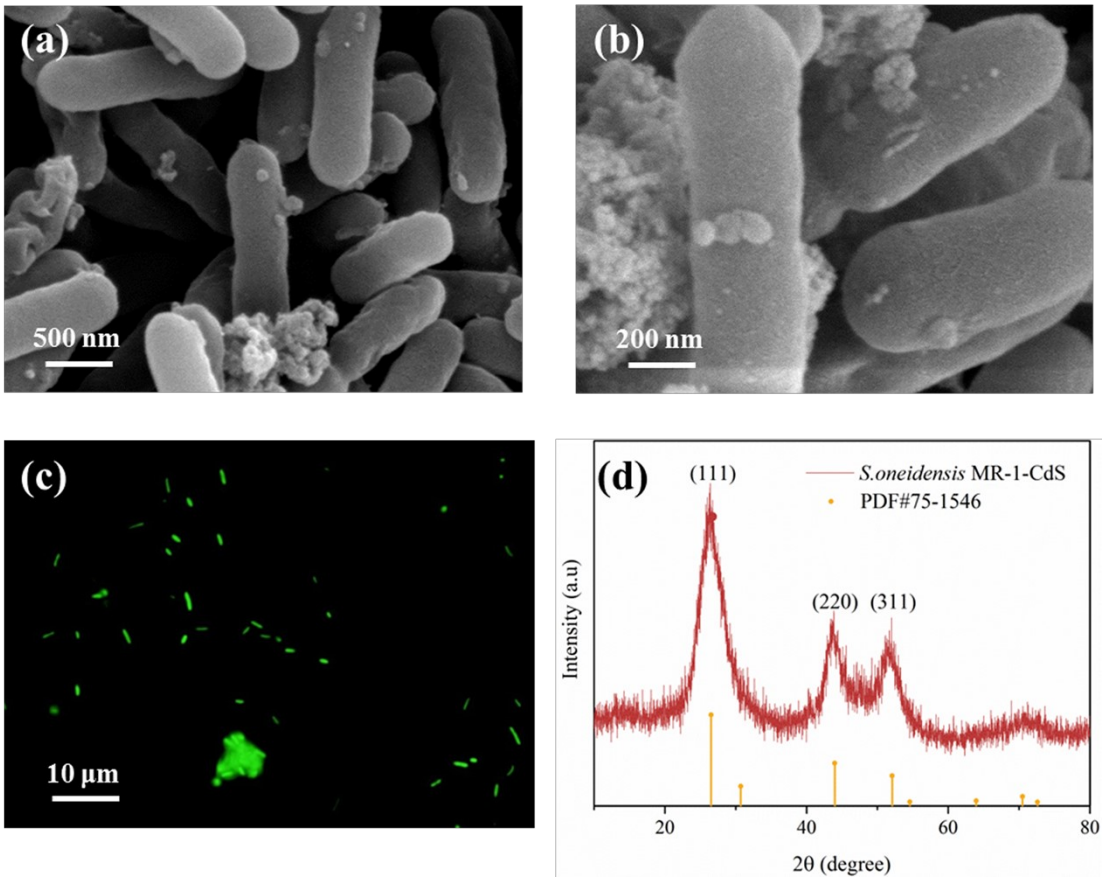

Fig. S3. (a, b) SEM images of *S. oneidensis* MR-1/CdS after decolorization reaction. (c) Fluorescence microscope image of *S. oneidensis* MR-1/CdS in live/dead cell viability assay after decolorization. (d) XRD partten of *S. oneidensis* MR-1/CdS after decolorization reaction.

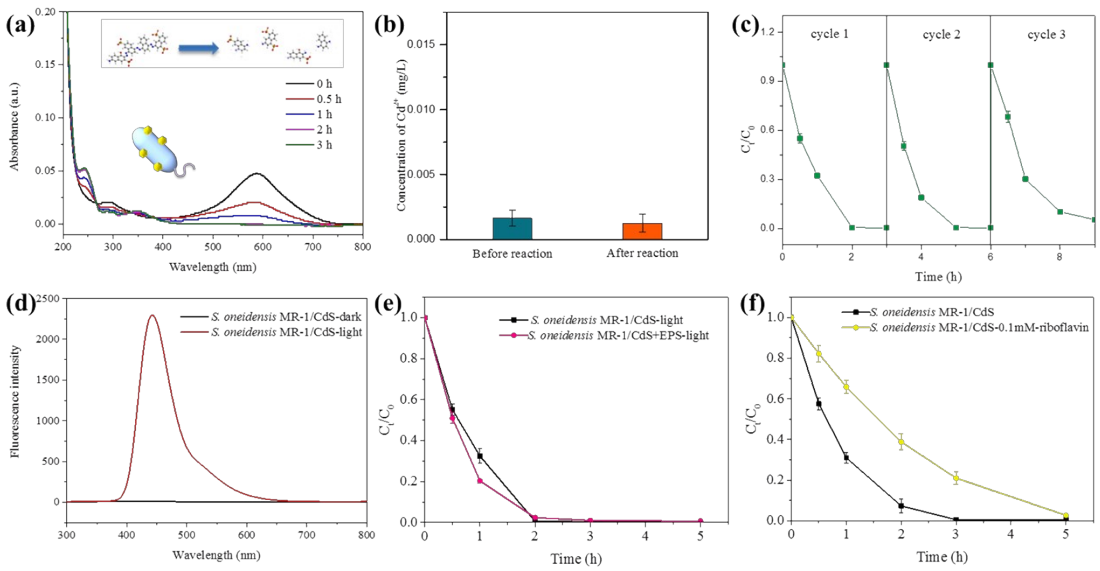

Fig.S4. (a) UV-vis spectra of DB71 decolorization process by *S. oneidensis* MR-1/CdS under LED irradiation. (b) The concentration of Cd^{2+} in the solution before and after decolorization reaction. (c) DB71 decolorization stability in *S. oneidensis* MR-1/CdS under light irradiation in 3 cycles. (d) Fluorescence emission spectra of *S. oneidensis* MR-1/CdS supernatant after DB71 decolorization reaction (excitation wavelength is 365nm). (e) Effects of additional EPS on decolorization efficiency in *S. oneidensis* MR-1/CdS. (f) Effects of additional riboflavin on decolorization efficiency in *S. oneidensis* MR-1/CdS.