

## Supplementary Materials for

### **A surface-display biohybrid approach to light-driven hydrogen production in air**

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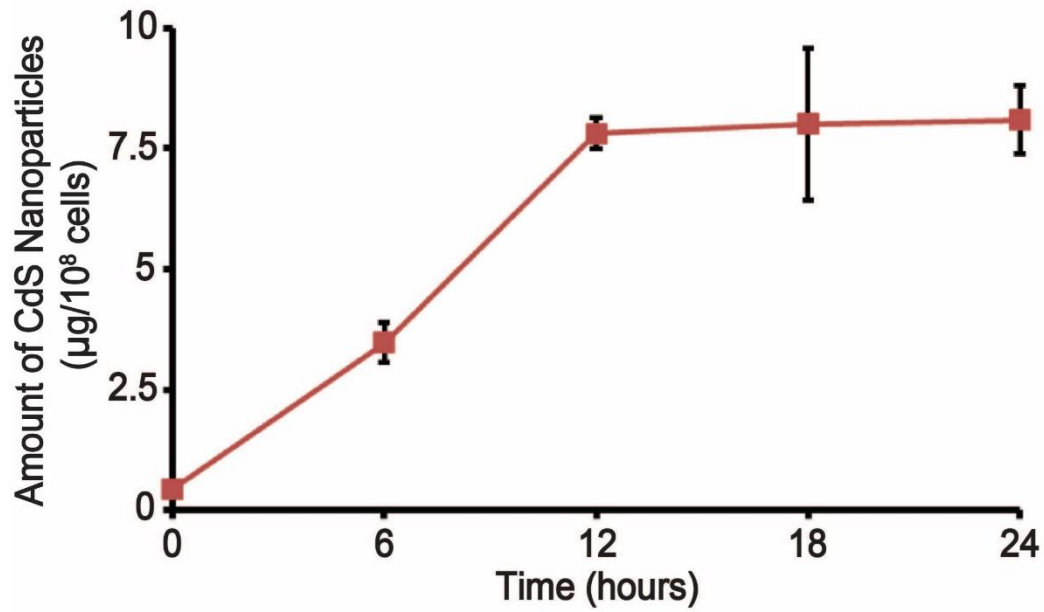
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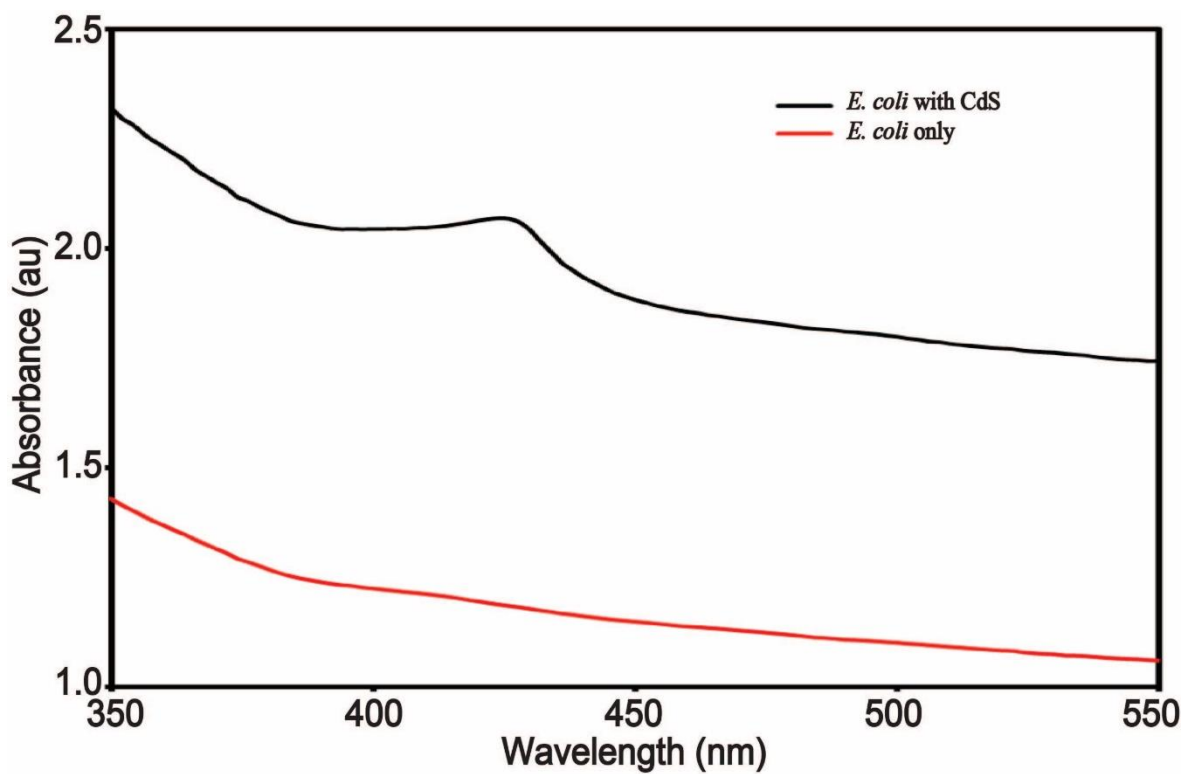
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- fig. S1. The amount of biosynthesized CdS nanoparticles on the engineered *E. coli* cell surface was measured by ICP-MS.
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- fig. S4. Quantitative comparison of the photoelectrical capacity of an in situ biosynthesized CdS nanoparticle.
- fig. S5. Image of encapsulated hybrid aggregates.

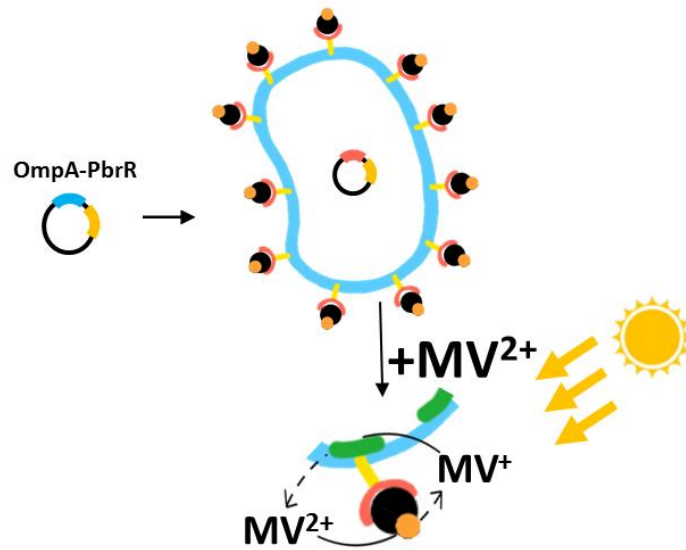
## Supplementary Results



**fig. S1.** The amount of biosynthesized CdS nanoparticles on the engineered *E. coli* cell surface was measured by ICP-MS. The mean values of three independently performed experiments were performed. Error bars correspond to the standard deviations.



**fig. S2. Characterization of biologically precipitated CdS nanoparticles on the outer membranes of *E. coli* cells.** The UV-Vis Spectrum of *E. coli*/CdS hybrids in solution demonstrating a band gap at 424 nm.



**fig. S3. Photon transfer by in situ biosynthesized CdS nanoparticles.** Details showing in situ CdS nanoparticles' adsorbing the photon from light and producing electrons to  $MV^{2+}$ . The sun indicates the source of photon and light power.

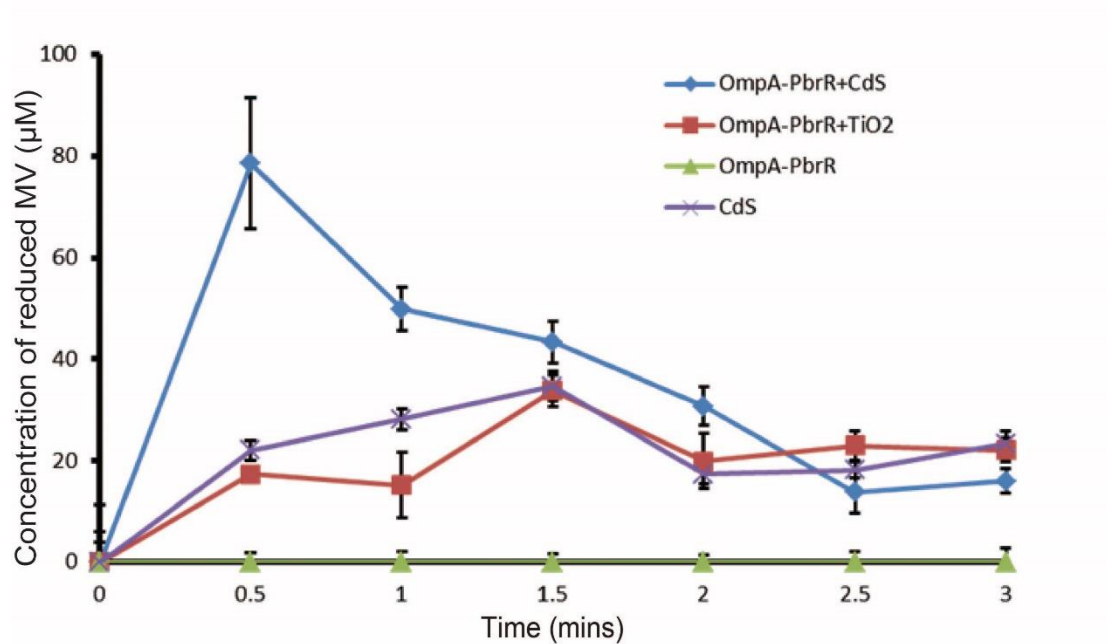
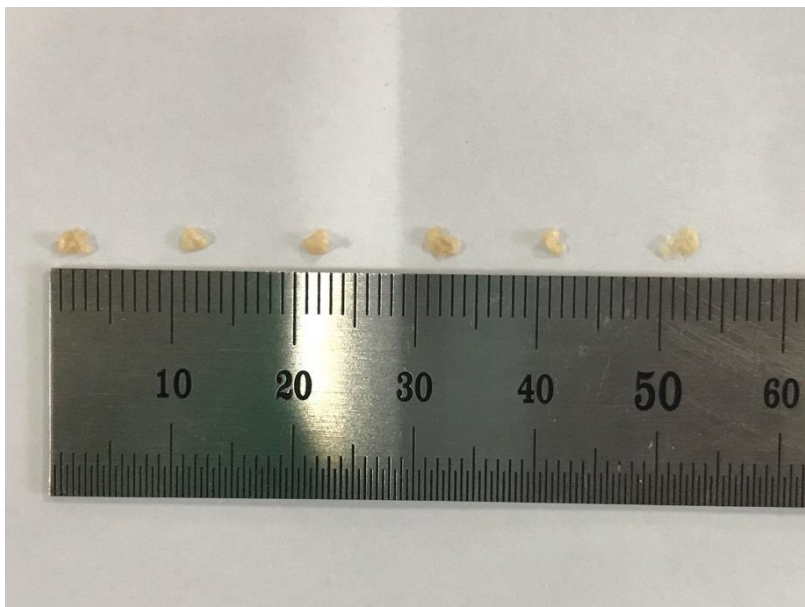


fig. S4. Quantitative comparison of the photoelectrical capacity of an in situ biosynthesized CdS nanoparticle.



**fig. S5. Image of encapsulated hybrid aggregates.**