Electronic Supplementary Material (ESI) for Materials Chemistry Frontiers.

Electronic Supplementary Information

For

An assembled ternary photocatalyst CoPh/CdSe@TiO_2 for simultaneous photocatalytic protons and CO_2 reduction

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1. **^{1}H NMR of L3**
2. **UV-Vis absorption of CoPh**
3. **Band gap of CdSe QDs and TiO_2**
4. **Mott-Schottky of CdSe QDs and TiO_2**
5. **XRD spectra**

1. ^{1}H NMR of L3

Figure S1. ^{1}H NMR of **L3** in D_2O solution

2. UV-Vis absorption of CoPh

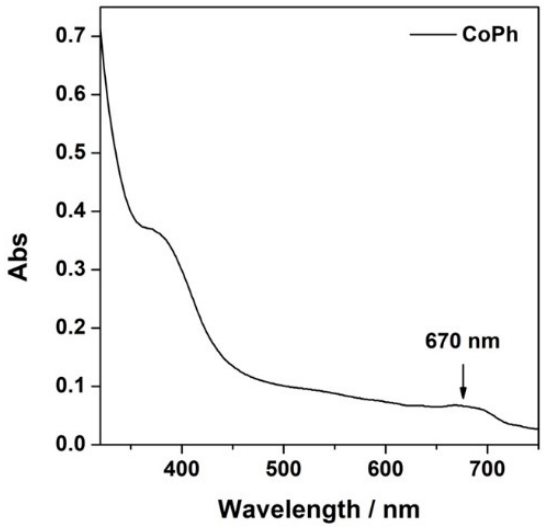

Figure S2. UV-Vis absorption of **CoPh** (1×10^{-4} M) in DMF solution

3. Band gap of CdSe QDs and TiO_2

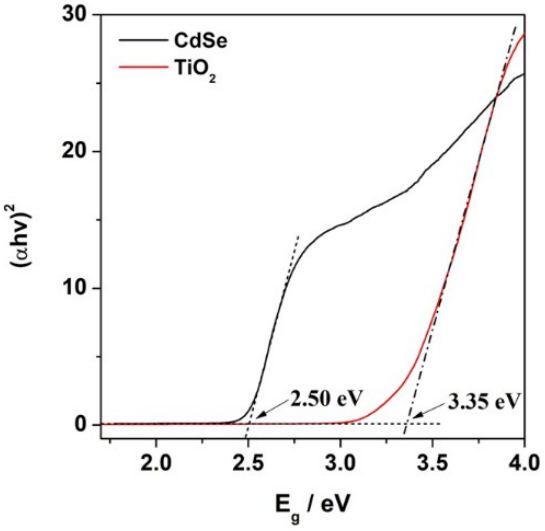

Figure S3. The band edge calculation of CdSe QDs and TiO_2 by the Kubelka-Munk formula.

4. Mott-Schottky of CdSe QDs and TiO_2

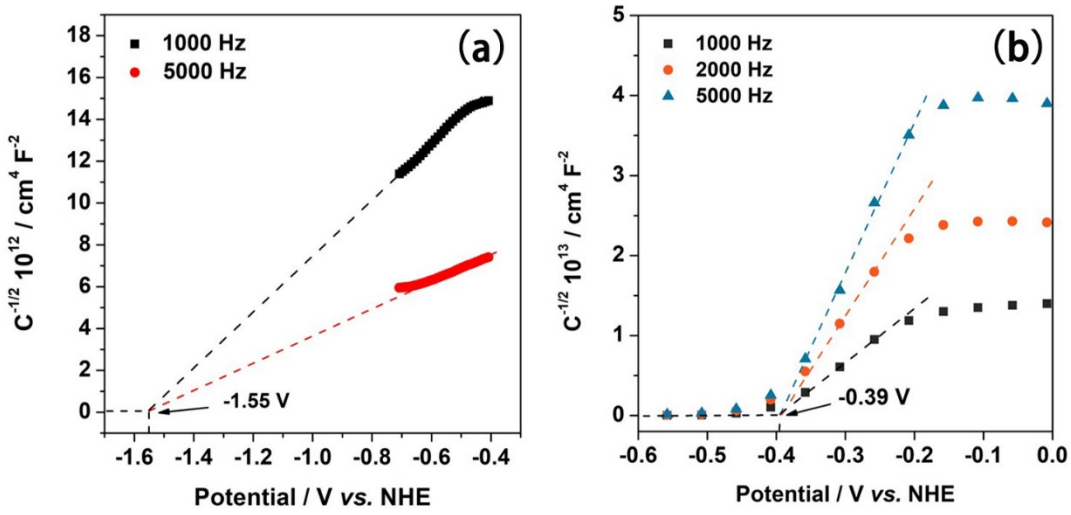

Figure S4. Mott-Schottky plots of (a) CdSe QDs and (b) TiO_2

5. XRD spectra

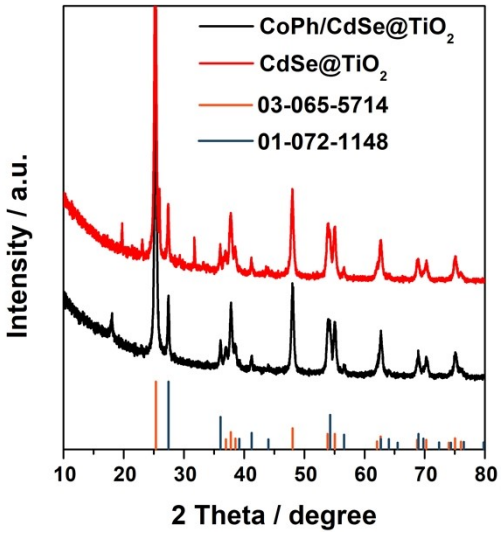

Figure S5. XRD spectra of **CoPh/CdSe@TiO_2** and **CdSe@TiO_2**