Cobalt phosphide as a highly active non-precious-metal cocatalyst for photocatalytic hydrogen production under visible light irradiation

Figure S1. The emission spectrum of the white LED light.
Figure S2. UV-vis spectrum of the obtained CdS NRs.

Figure S3. Fluorescent spectrum of the CdS NRs excited at 365 nm.

Figure S4. Dynamic light scattering (DLS) measurement of the Co$_2$P NPs.
Figure S5. SAED pattern recorded from the Co$_2$P NPs.

Figure S6. H$_2$ evolution as a function of CdS NRs concentrations for the system containing 1.0 $\times$ 10$^{-4}$ M Co$_2$P NPs and 0.5 M DL-mandelic acid at pH 6.0 in 15 mL aqueous solution under visible light irradiation.
Figure S7. ESI-MS spectra of the reaction solution after 10 h of photocatalytic reaction for the system containing $2.3 \times 10^{-4}$ M CdS NRs, $1.0 \times 10^{-4}$ M Co$_2$P NPs and $0.5$ M DL-mandelic acid. The signals with m/z at 149 and 151 are assigned to benzoylformic acid and DL-mandelic acid, respectively. Figures (1-2, 1-3) are the amplification of Figure (1-1), respectively.
**Figure S8.** GC signals obtained using He (instead of Ar) as the carrier gas. The system contained $2.3 \times 10^{-4}$ M CdS NRs, $1.0 \times 10^{-4}$ M Co$_2$P NPs and 0.5 M DL-mandelic acid in 6 mL D$_2$O solution.

**Figure S9.** XPS spectrum of the (a) C (1s) regions and (b) survey spectrum of the obtained Co$_2$P nanoparticles.