Electronic Supplementary Material (ESI) for Physical Chemistry Chemical Physics

Plasmon-Enhanced Water Splitting on TiO_2-Passivated GaP Photocatalysts

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Supporting Information

1. Distinguish the plasmonic effect from the co-catalyst effect of Au

Noble metals, such as Pt, Au, and Ru, serve as electron-trapping co-catalysts to facilitate charge separation and enhance chemical reactions. To distinguish the plasmonic effect from the co-catalyst effect, we replace Au with Pt. As shown in Figure S1, the co-catalyst effect is not significant when the applied voltage is not more negative than -1.0V vs. Ref (Ag/AgCl). Therefore, we claim the Au as a co-catalyst is not the determining factor in our case.

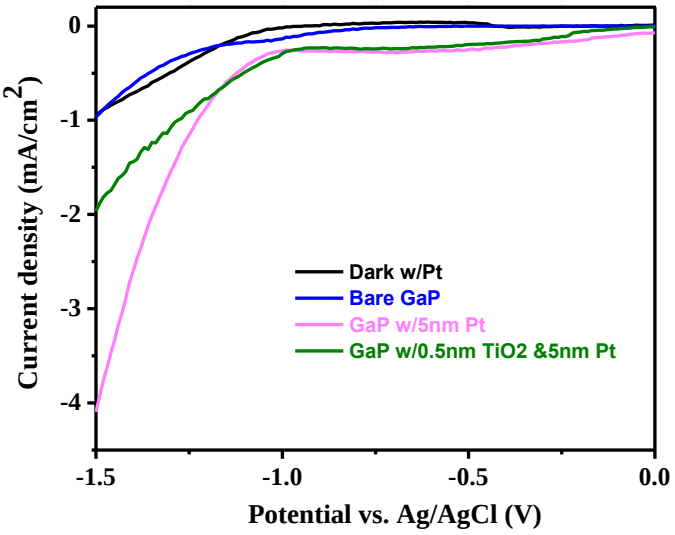

Figure S1. Photocurrent plotted as a function of voltage for GaP photocatalysts with Pt nanoparticles with and without TiO_2 under 1W/cm^2 532nm illumination in a 0.5M Na_2SO_4 solution.

2. SEM images

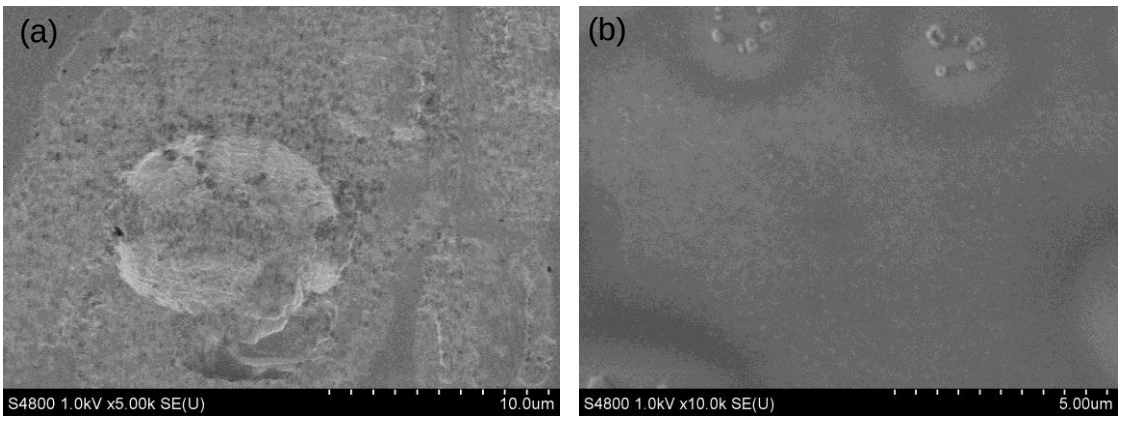

Figure S2. SEM image of bare GaP (a) and TiO_2 passivated GaP (b) after 12 hour reaction.