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Noble Metal-Free Ni(OH)₂/g-C₃N₄ composite photocatalyst with Enhanced visible-light photocatalytic H₂-production Activity

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Fig. S1 Effect of Pt amount on photocatalytic H₂-production activity of $g-C_3N_4$. The weight ratio of Pt to $(g-C_3N_4 + Pt)$ was 0.1, 0.25, 0.5, 1.0, 1.5, 2.0 and 3.0 (wt%), and the corresponding samples were labeled as Pt0.1, Pt0.25, Pt0.5, Pt1.0, Pt1.5, Pt2.0 and Pt3.0, respectively. Pt/g-C₃N₄ samples were prepared by photoreduction method. Photocatalytic H₂ production was performed in a 10 vol% triethanolamine aqueous solution under visible light irradiation (\geq 400nm, 350W Xe lamp).

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Fig. S2 A comparison of photocatalytic H₂-production activity of Ni/g-C₃N₄, NiO/g-C₃N₄ and Ni(OH)₂/g-C₃N₄ samples (The molar ratio (\mathbf{R}) of co-catalyst to (g-C₃N₄ + co-catalyst) was 0.5 (mol%)) under visible light irradiation (\geq 400 nm, 350W Xe lamp) in a 10 vol% triethanolamine aqueous solution. Ni/g-C₃N₄ sample was prepared by NaBH₄ reduction method. NiO/g-C₃N₄ was obtained by heatment of Ni(OH)₂/g-C₃N₄ at 400 °C for 30 min in air





Fig. S3 A comparison of photocatalytic H₂-production activity of Ni(OH)₂/P25 Pt/P25 and Ni(OH)₂/g-C₃N₄ (Ni0.5) samples under visible light irradiation (\geq 400nm, 350W Xe lamp) in 10 vol% triethanolamine aqueous solution (a) and 25 vol% methanol aqueous solution (b). Pt/P25 sample was prepared by photoreduction method and the molar ratio (\mathbf{R}) of Pt to (P25 + Pt) was 0.5. Ni(OH)₂/P25 was obtained by precipitation method and the molar ratio (\mathbf{R}) of Ni(OH)₂ to (P25 + Ni(OH)₂) was 0.5.