

Effect of CuPt alloy on TiO₂ on photocatalytic CO₂ conversion

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We demonstrate the effect of CuPt nanoparticles (NPs) on TiO₂ on CO₂ conversion. The Cu alloying with Pt help improve the resistance of Cu nanoparticles to oxidation. In photocatalytic CO₂ conversion, Cu provides adsorption sites, and Pt plays a role of transferring electron to adsorbed CO₂. In addition, to improve selectivity, it is important to transfer proton generated from water oxidation to CO₂ adsorbed on Cu. The Pt, which forms strong bonding with proton, helps produce CH₄ selectively. Finally, the size of CuPt NPs has an effect on the efficiency of CO₂ conversion. Small size of CuPt NPs showed the higher photocatalytic activity.