TiO_2/WO_3 composite photocatalysts from different precursor functionalities for photocatalytic activity

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TiO_2 is outstanding photocatalyst because of its superior photoactivity, chemical stability, and reasonable price. But TiO_2 has some defects like large band gap and fast electron/hole recombination. Composite structure is widely used method for solving these problems. WO_3 is proper material to narrowing band gap and separating electron hole pairs. Many researchers studied about optimum amount of WO_3 species but the optimum condition of composition was fewly reported. At this study, the suitable TiO_2 precursor for making composite structure with WO_3 was considered. We used three TiO_2 precursors, titaniuim n-propoxide, titanium isopropoxide, and titanium n-butoxide. The WO_3 precursor, tungsten isoproxpoide was fixed material. The samples were characterized by XRD, XPS, TEM, UV-Vis, and Solar simulator.