

Supporting information for manuscript

**Improved propane photooxidation activities upon nano $\text{Cu}_2\text{O}/\text{TiO}_2$
heterojunction semiconductors at room temperature**

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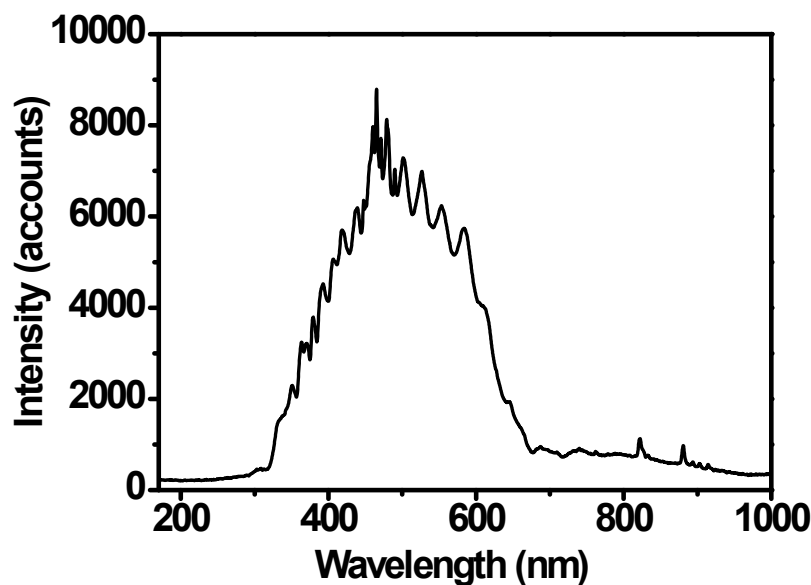


Fig. S1. The spectrum of the Xe lamp.

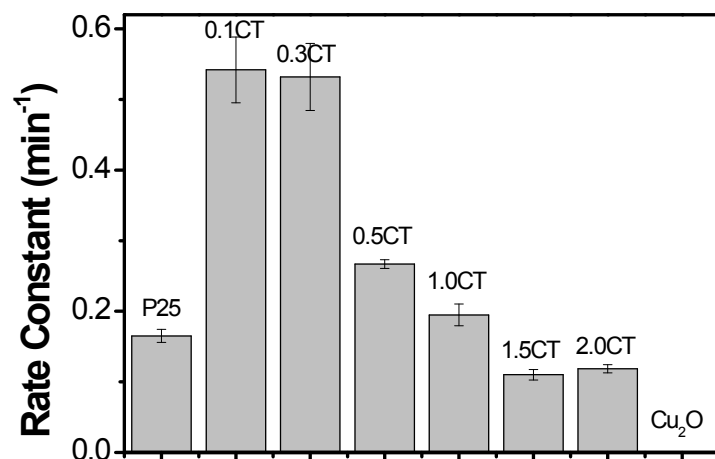


Fig. S2. Apparent rate constant k of propane photodegradation upon P25 and the Cu_2O - TiO_2 (CT) nanocomposites under simulated solar light irradiation.

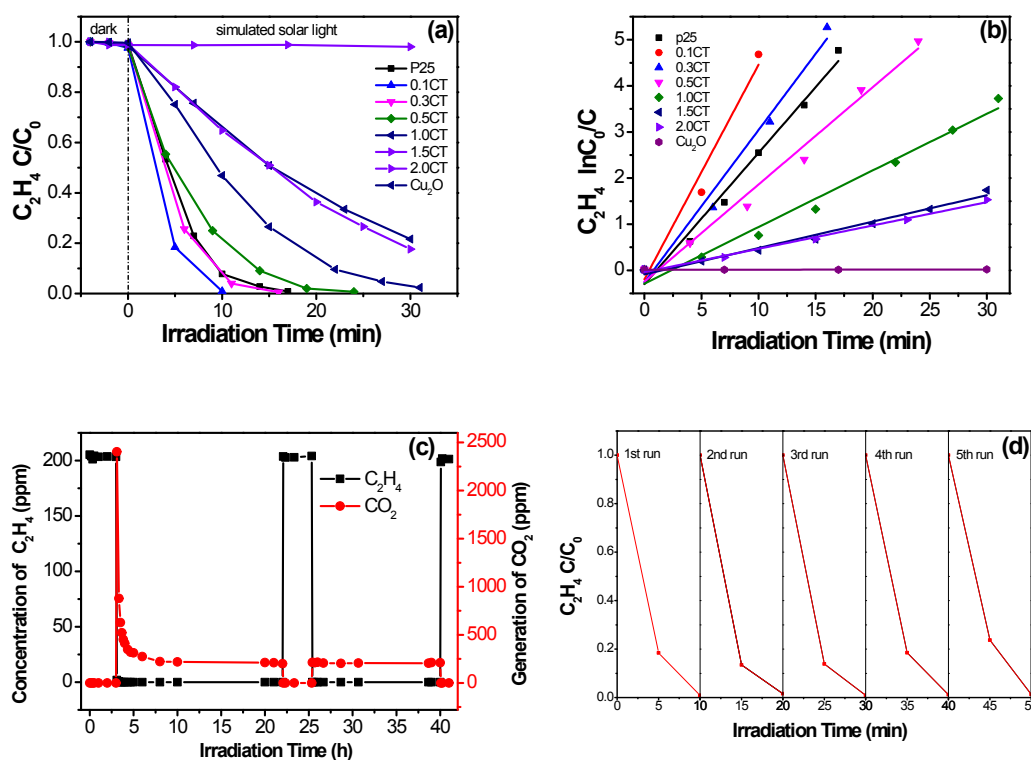


Fig. S3. (a) Time course of C_2H_4 photodegradation upon the as-synthesized photocatalysts; (b) Kinetics plots of C_2H_4 degradation in (a); (c) photocatalytic C_2H_4 degradation and CO_2 generation over the 0.1CT in a flow mode; (d) Recycle test of photocatalytic activity of 0.1CT toward C_2H_4 degradation under simulated solar light irradiation.

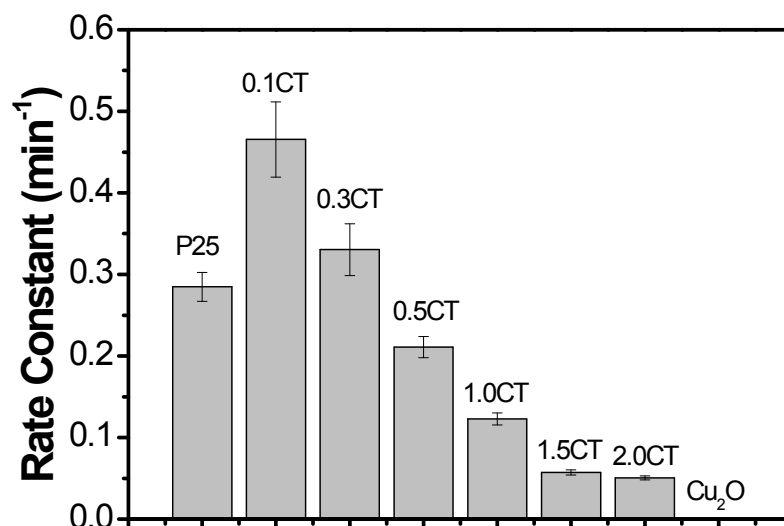


Fig. S4. Apparent rate constant k of ethylene photodegradation upon P25 and the Cu_2O - TiO_2 (CT) nanocomposites under simulated solar light irradiation.

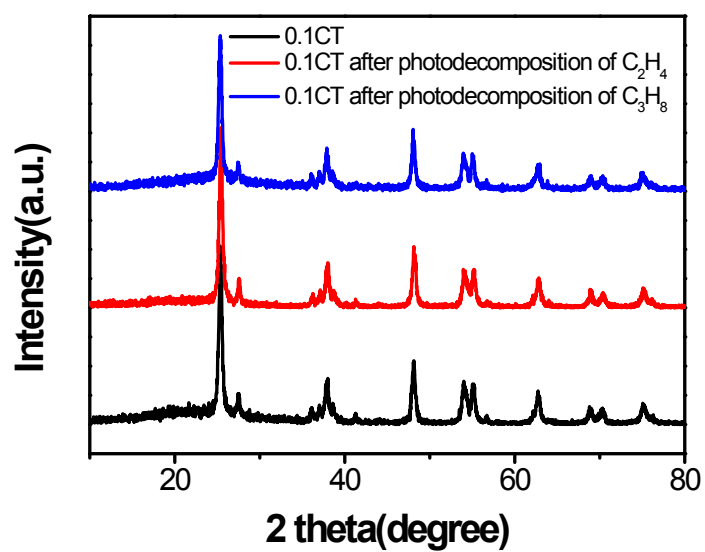


Fig. S5. XRD patterns of 0.1CT before and after the HC photodegradation tests.

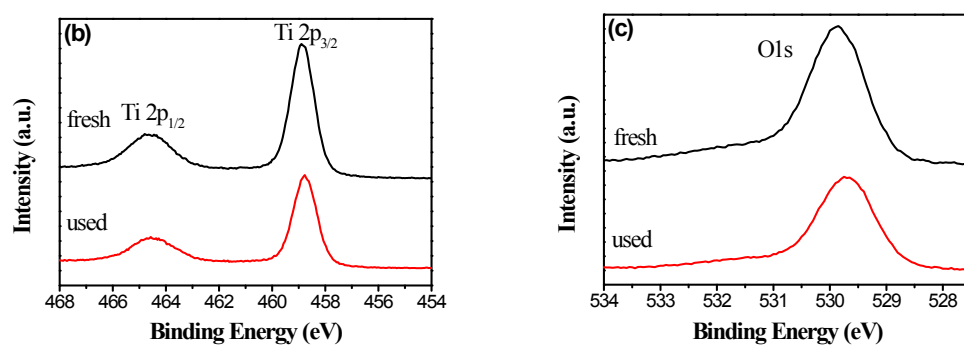


Fig. S6. XPS spectra of the 0.1CT sample before and after the photocatalytic tests: (a) Ti 2p; (b) O 1s.

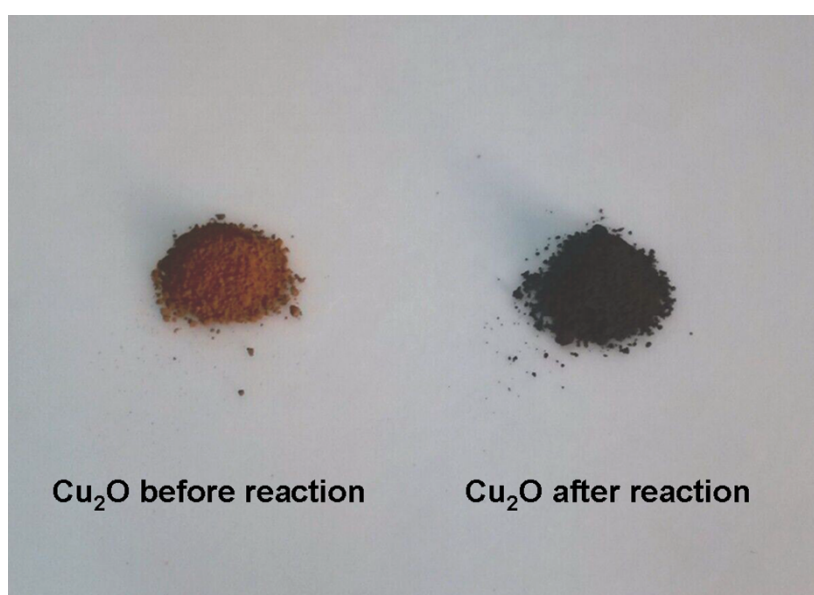


Fig. S7. Photograph of the Cu₂O before and after the gas phase HC photoreactions under simulated solar light irradiation.