**Supporting information for manuscript**

**Improved propane photooxidation activities upon nano Cu_{2}O/TiO_{2} heterojunction semiconductors at room temperature**

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![Graph](image_url)

**Fig. S1.** The spectrum of the Xe lamp.
Fig. S2. Apparent rate constant $k$ of propane photodegradation upon P25 and the Cu$_2$O-TiO$_2$ (CT) nanocomposites under simulated solar light irradiation.

Fig. S3. (a) Time course of C$_2$H$_4$ photodegradation upon the as-synthesized photocatalysts; (b) Kinetics plots of C$_2$H$_4$ degradation in (a); (c) photocatalytic C$_2$H$_4$ degradation and CO$_2$ generation over the 0.1CT in a flow mode; (d) Recycle test of photocatalytic activity of 0.1CT toward C$_2$H$_4$ degradation under simulated solar light irradiation.
**Fig. S4.** Apparent rate constant $k$ of ethylene photodegradation upon P25 and the Cu$_2$O-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 Cu$_2$O before and after the gas phase HC photoreactions under simulated solar light irradiation.