Supplementary Material

Modulation Cu_xO structure and morphology for acceleration of peroxymonosulfate oxidation

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1. Materials

All the reagents used were analytically pure, including $Cu(CH_3COO)_2 \cdot H_2O$, ethanol, sodium hydroxide (NaOH)，hydrochloric acid (HCl), methanol (MeOH), tert-butyl alcohol (TBA), potassium acetate (CH_3COOK), potassium nitrate (KNO_3), potassium bicarbonate ($KHCO_3$), potassium chloride (KCl), peroxymonosulfate ($2KHSO_5 \cdot KHSO_4 \cdot K_2SO_4$, PMS) and ciprofloxacin ($C_{17}H_{18}FN_3O_3$, CIP). Deionized water was used throughout the experiments.

2. Characterization

Firstly, D/Max 2500PC X-ray powder diffractometer was used to analyze the sample through the Cu Kα radiation source, and the crystal structure and phase composition of the catalyst sample were determined. The morphology and composition of the sample were observed by TESCAN MIRA LMS field emission scanning electron microscope, and the distribution and relative content of elements in the sample were determined, so as to determine the morphological characteristics and chemical composition of the sample. The Micromeritics ASAP 2460 analyzer was used to determine the N_2 adsorption-desorption isotherm at a low temperature of 77 K to determine the specific surface area and pore size distribution of the sample. Finally, Thermo Scientific K-Alpha X-ray photoelectron spectrometer was used to analyze the samples with Al Kα radiation as the excitation source, so as to determine the elemental composition and valence information of the catalyst surface.

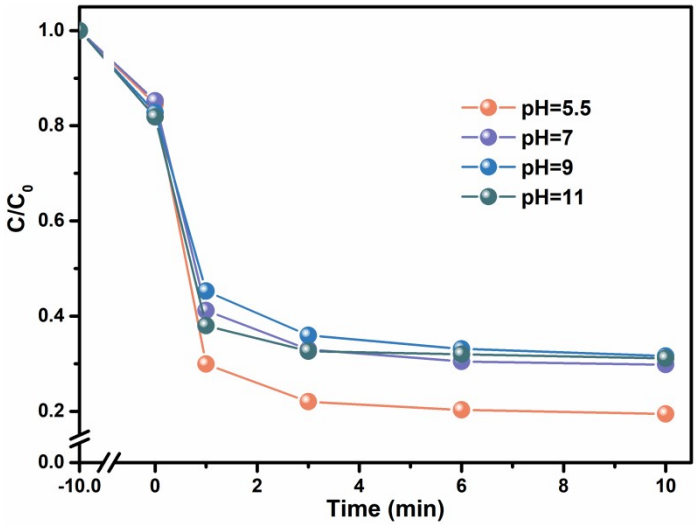

Fig. S1. CIP degradation performance of catalysts prepared under different solvothermal pH.

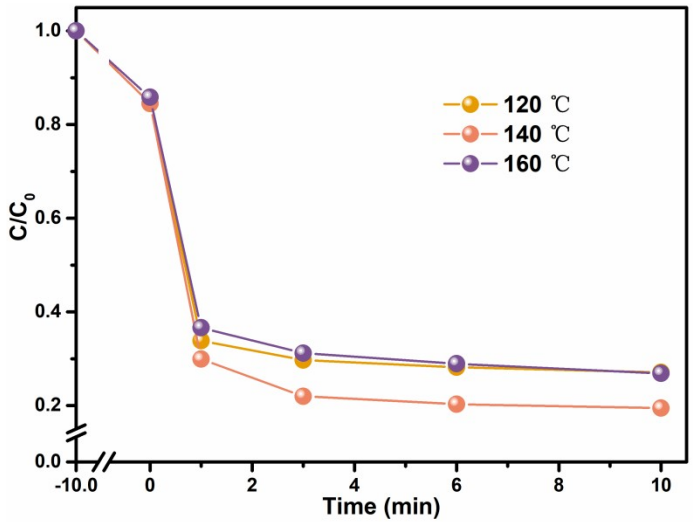

Fig. S2. CIP degradation performance of catalysts prepared under different solvothermal temperature.

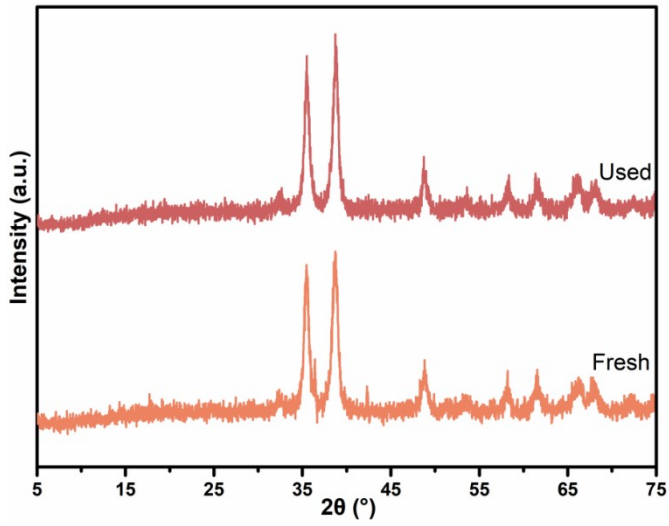

Fig. S3. XRD patterns of fresh and used Cu_xO-3 catalyst.

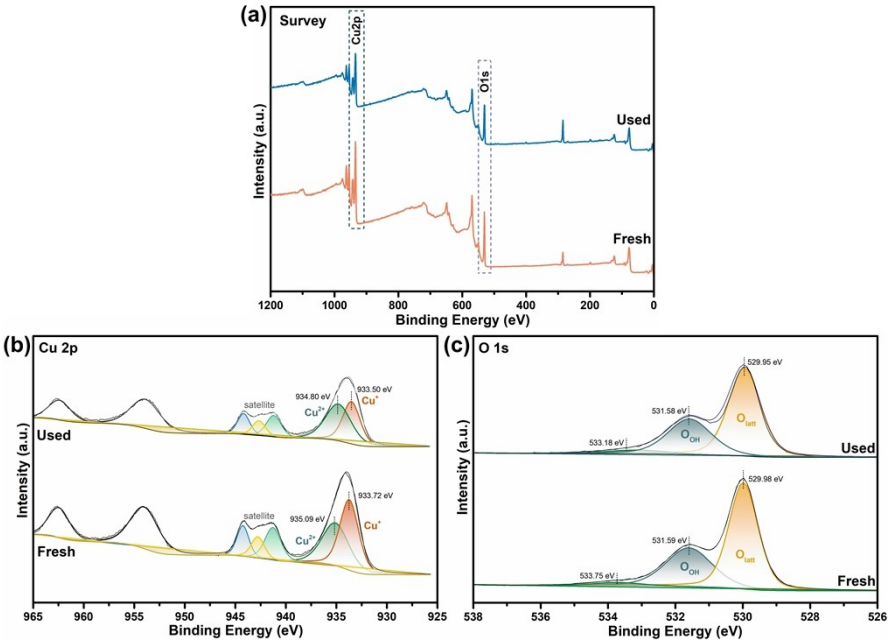

Fig. S4. XPS spectra of fresh and used Cu_xO-3 catalyst.