Supporting Information

Enhanced photocatalytic degradation of organic contaminants over CuO/g-C_3N_4 p–n heterojunction under visible light irradiation

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S1. The synthesis of samples

S1.1. Preparation of different amount CuO samples

Cyanuric acid (2 g) and melamine (1 g) were put into a beaker, and then anhydrous ethanol (20 mL) was added in the above beaker under vigorous stirring. After a period of 3 h, the mixture was heated at 60 °C till all anhydrous ethanol completely evaporated. Then, the obtained solids in the beaker were transferred to a crucible, which were subsequently calcined at 520 °C for 4 h. After the calcinations, the color of the solids had changed to yellow, implying g-C_3N_4 had been produced. To prepare CuO-g-C_3N_4, g-C_3N_4 (1 g) was first put into a round bottom flask, then 100 mL copper acetate solution (0.05M, 0.1 M, 0.2M ,0.3M) were also introduced respectively. This mixture were kept at acute ultrasonic

for 1 h and stirred for another 3 h at room temperature. Subsequently, the mixture were washed by distilled water and absolute ethyl alcohol through centrifugation for 6 times to remove unreacted raw materials. Subsequently, the mixture was treated through vacuum freeze-drying for 24 h. The dried powder was calcinated at 500 °C for 2 h, and the final sample were denoted as CuCN0.05, CuCN0.1(CuO-g-C_3N_4), CuCN0.2, CuCN0.3.

S1.2. Preparation of bare CuO

Copper acetate (4 g) were put into a crucible, and then calcined at 520 °C for 4 h. After the calcination, the black material was washed by distilled water and absolute ethyl alcohol through centrifugation for 6 times to remove unreacted raw materials. Subsequently, the powder was treated through vacuum freeze-drying for 24 h. The dried black powder was calcinated at 500 °C for 2 h.

S2. The optimization of different amount CuO in the synthesis of samples

The CuO content of different sample (CuCN0.05, CuCN0.1(CuO-g-C_3N_4), CuCN0.2, CuCN0.3) were detected to be 0.92%, 1.98%, 4.15%, 6.04%, respectively. From Figure S3c, we can see that the photocatalytic RhB degradation rates of g-C_3N_4, CuCN0.05, CuCN0.1(CuO-g-C_3N_4), CuCN0.2, CuCN0.3 were 43.6%, 57.7%, 88.9%, 74.44%, 47.2%. and the photocatalytic NO removal rates were 40.1%, 56.49%, 70.8%, 65.2%, 42.6%. From the curve of the RhB photocatalytic degradation rate of different CuO loading amount (Figure S3d), it can be known that the optimal CuO loading amount is 1.98%.

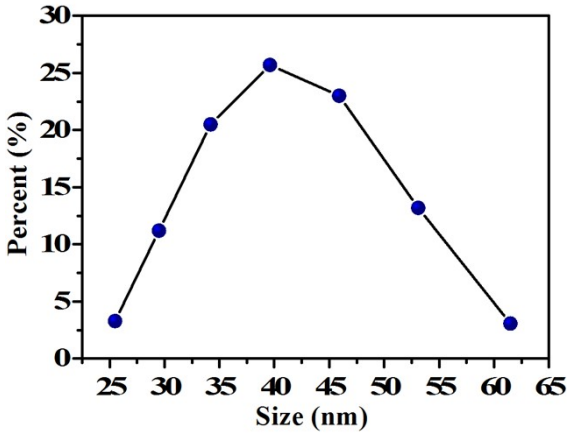

Figure S1. Particle size distribution curve

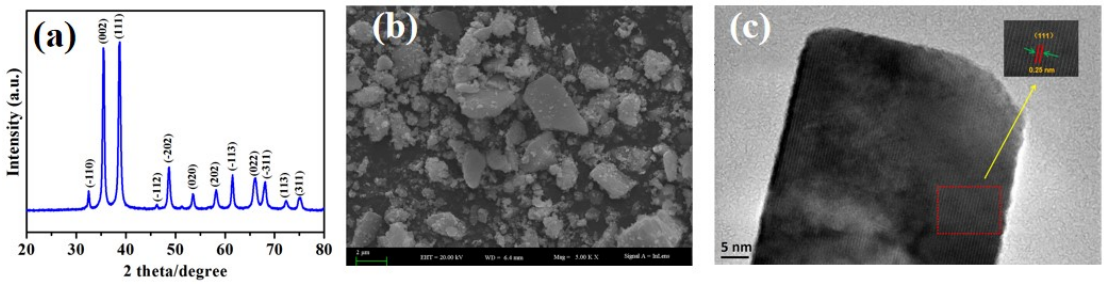

Figure S2. The XRD (a), SEM(b), and HRTEM (c) images of CuO

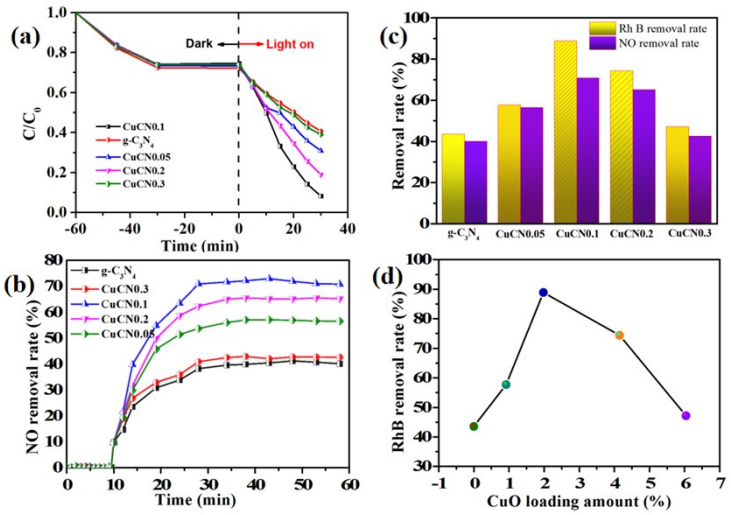

Figure S3. The photocatalytic degradation of RhB (a) and NO removal rate (b) for different samples, Comparison of photocatalytic removal rate in different samples (c), the curve of the photocatalytic RhB degradation rate of different CuO loading amount (d).