Supporting Information

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Text S1

The Faradic efficiency and NH_3 yield rate were calculated through equations 7 and 8 as below:

$$FE_{(NH_3)} = \frac{q}{Q} = \frac{96500 \times 8 \times \frac{[NH_3] \times V}{17}}{1000000 \times \int idt} \quad \text{(S1)}$$

$$r_{(NH_3)} = \frac{[NH_3] \times V}{t \times m_{cat}} \quad \text{(S2)}$$

where, $[NH_3]$ indicates the mass concentration of produced ammonia (μg mL^{-1}) V implies the volume of solution in the cathode chamber (mL), m_{cat} is the amount of active material (catalyst) on the electrode (mg), and t is time (s). The mass of the catalyst on the electrode is determined after deposition by weighing.

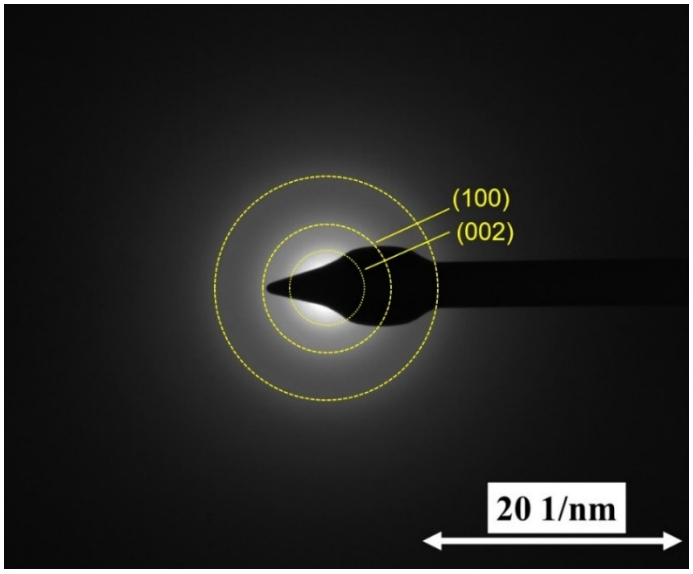

Fig. S1 SAED of BCN Specimen showing its amorphous structure.

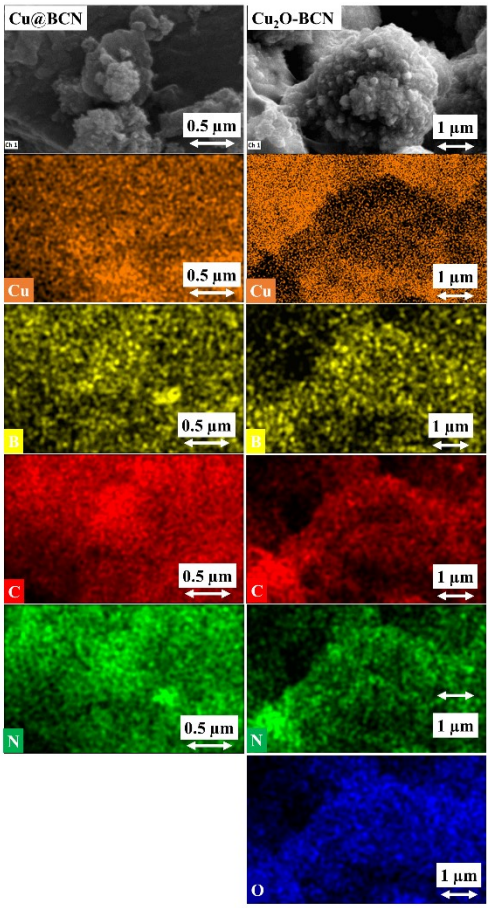

Fig. S2 EDS elemental maps of Cu, B, C, N, and O in Cu@BCN and Cu_2O-BCN.

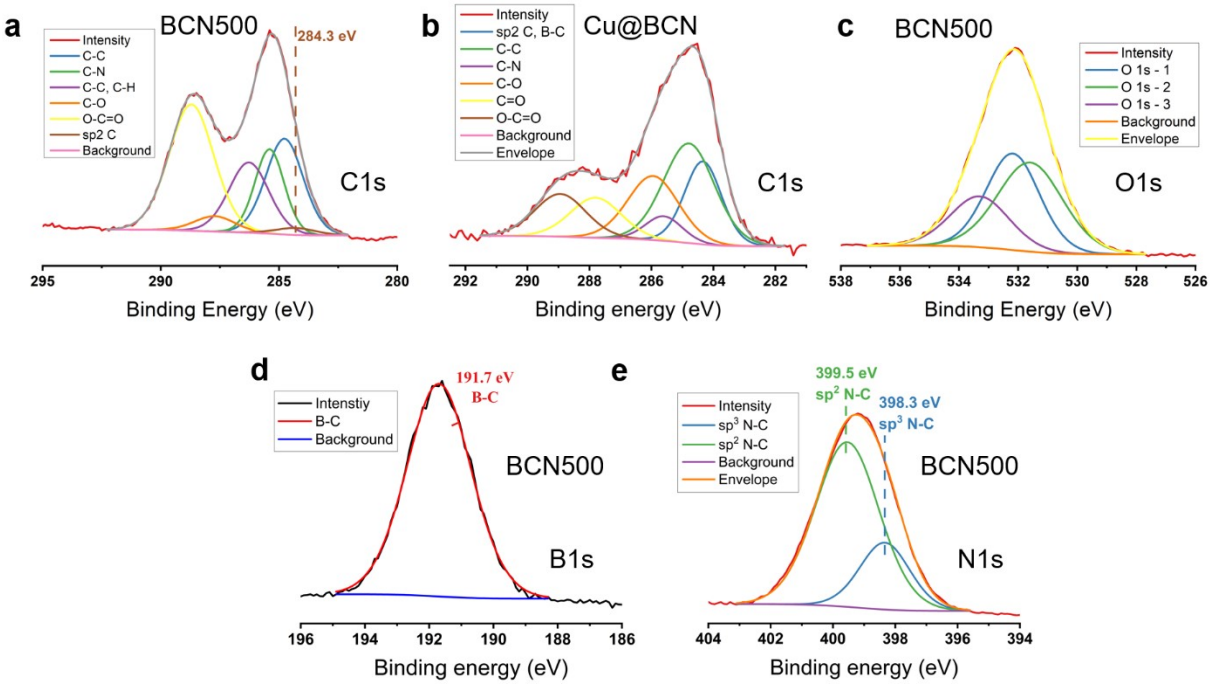

Fig. S3 High-resolution XPS spectra of C1s in BCN500 (a) and Cu@BCN (b), and O1s (c), B1s (d), and N1s (e) in BCN500.

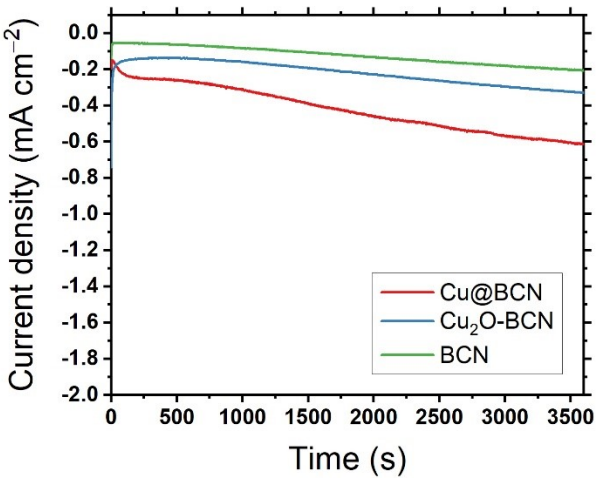

Fig. S4 Chronoamperometric (CA) curves of the Cu@BCN, Cu_2O-BCN, and the as-synthesized BCN500 to compare electrocatalyst stability under NO_3RR.

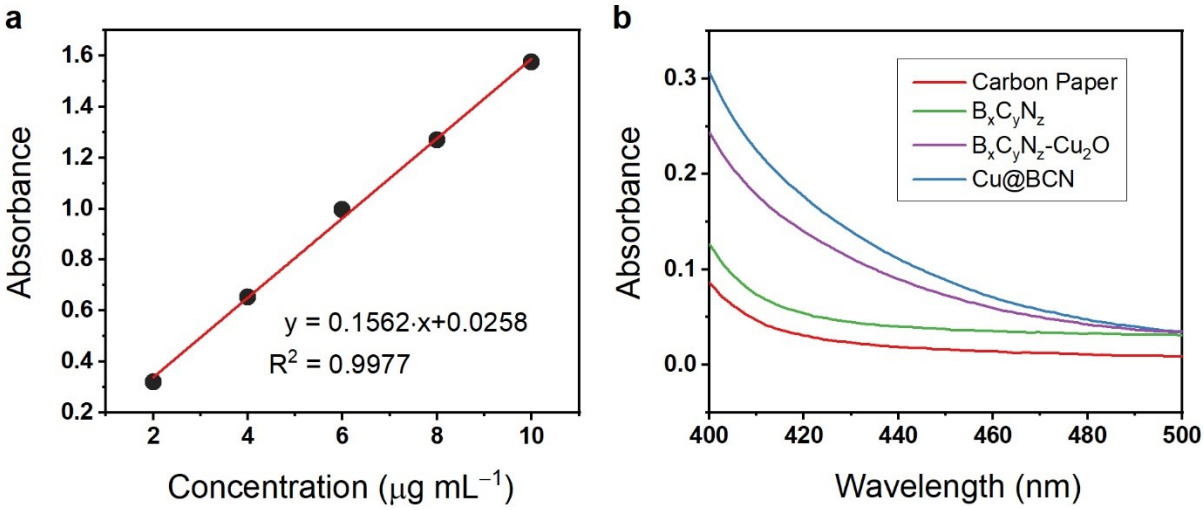

Fig. S5 UV-vis calibration curve for ammonia quantification using the Nessler method (a) and UV-vis spectra of the electrolyte after nitrate electrolysis on bare carbon paper and the studied samples (b).