Supporting Information

Nitrogen-Doped Tubular Carbon Foams for Efficient Electroreduction of CO\textsubscript{2} to Syngas with Potential-Independent CO/H\textsubscript{2} Ratios

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Figure S1. Optical image (a) and FESEM image (b) of the pristine PU foam.
Figure S2. Photographs of the various 3D N-doped tubular carbon foam electrodes. (a) top-view. (b) side-view. (c) 3D N-doped tubular carbon foam electrodes with different diameters.
Figure S3. Cross-section view of the 3D carbon skeletons.
Figure S4. Measurements of the wettability of carbon foams. (a) Time-lapse images of a water droplet sinking in the N-doped carbon foam surface. (b) Time-lapse images of a water droplet resting on the pristine carbon foam surface.
Figure S5. The high-resolution XPS spectra of N 1s of CF-30 (a), CF-60 (b), and CF-90 (c).
Figure S6. The tubular electrode assembled by N-doped carbon foam.
Figure S7. The FE of CO on various planar electrodes at different applied potentials.
Figure S8. FEs of gaseous products on various N-doped tubular carbon foam electrodes at different applied potentials. (a) CF-30. (b) CF-60. (c) CF-90. (d) CF-120.
Figure S9. FE\textsubscript{s} of gaseous products on pristine CF.
Figure S10. $^1$H-NMR spectra of the electrolyte after 4 h CO$_2$ reduction electrolysis at -0.60 V vs. RHE for CF-30 (a), CF-60 (b), CF-90 (c), and CF-120 (d).
Figure S11. H$_2$ production rates of various samples at different applied potentials.
Figure S12. Performance of CF-120 powder catalyst (catalyst loading: 0.8 mg cm$^{-2}$). (a) Linear sweep voltammetric curves in the Ar (blue line) or CO$_2$-saturated (red line) 0.1 M KHCO$_3$ aqueous solutions with a 20 mV s$^{-1}$ scan rate. (b) FEs of gaseous products.
Figure S13. The cross-sectional FESEM images (a1, b1, c1, d1), FEs of gaseous products (a2, b2, c2, d2) and Tafel plots (a3, b3, c3, d3) of the CF-120 powder electrodes with different catalyst loadings (a: 0.8 mg cm$^{-2}$, b: 1.2 mg cm$^{-2}$, c: 1.6 mg cm$^{-2}$, d: 2.0 mg cm$^{-2}$).
Figure S14. Photographs of the electrode used in actual experiment (left: side-view; right: top-view).
Figure S15. (a) The high-resolution XPS spectra of N 1s of CF-120 after 8 h test. (b) The content and types of N in CF-120 and CF-120 after 8 h test.