Electronic Supplementary Material (ESI) for Nanoscale.

Supporting information for

Cu-CDots nanocorals as electrocatalyst for highly efficient CO_2 reduction to formate

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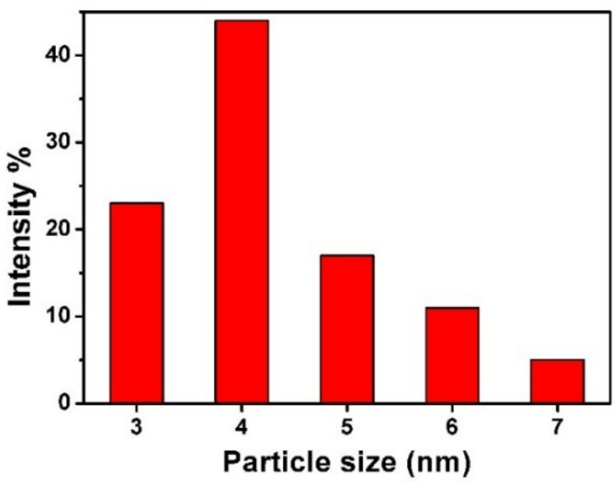

Fig. S1 CDot size distribution.

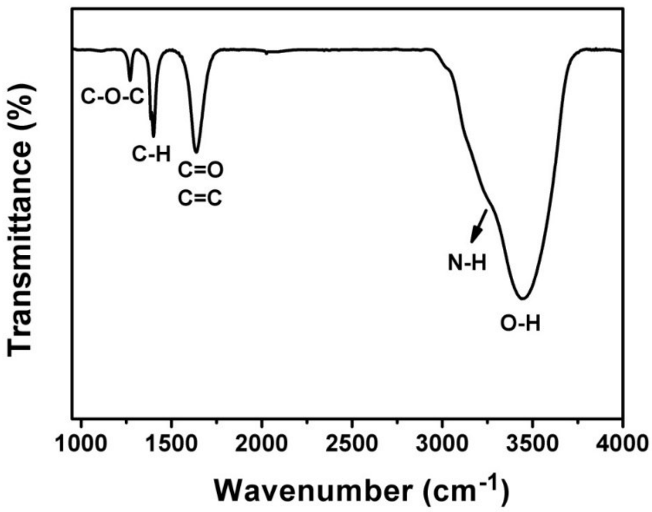

Fig. S2 The FTIR spectrum of CDots.

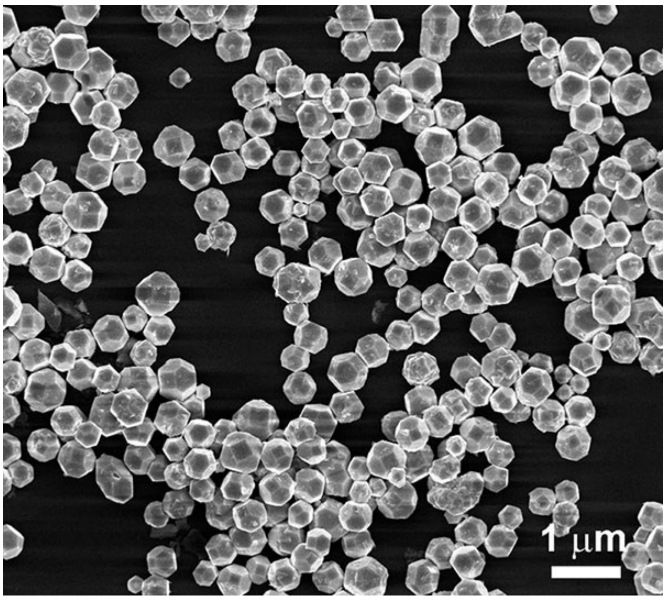

Fig. S3 The SEM image of Cu_2O nanoparticles.

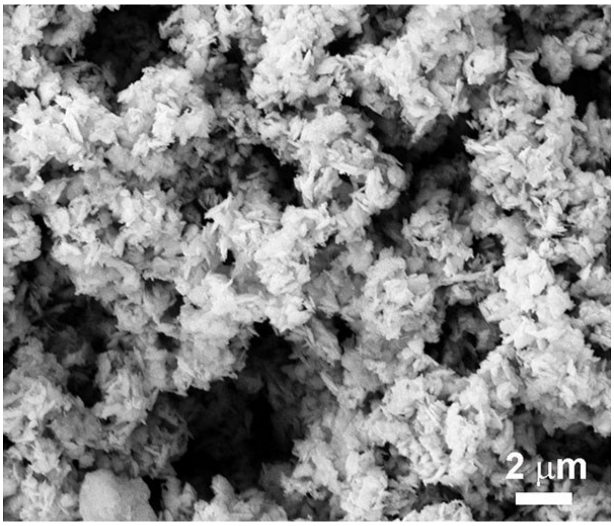

Fig. S4 The SEM image of Cu_2O-CDots nanocorals.

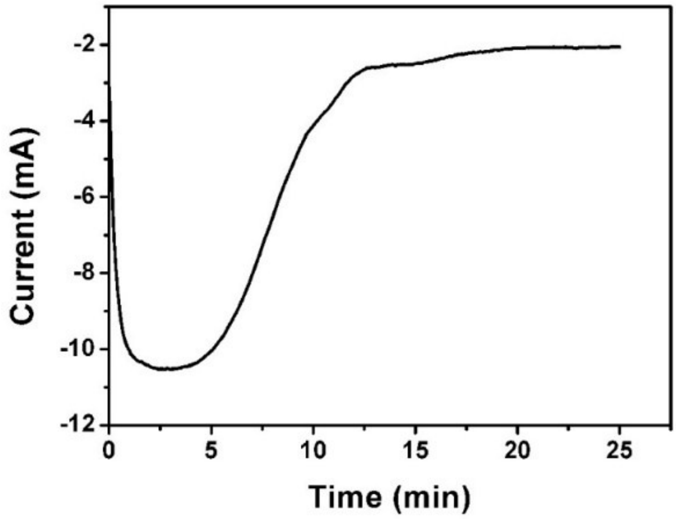

Fig. S5 Electrode current recorded during reduction of Cu_2O-CDot nanocorals at −0.4 V vs. RHE in 0.5 M $KHCO_3$ purged with N_2 gas.

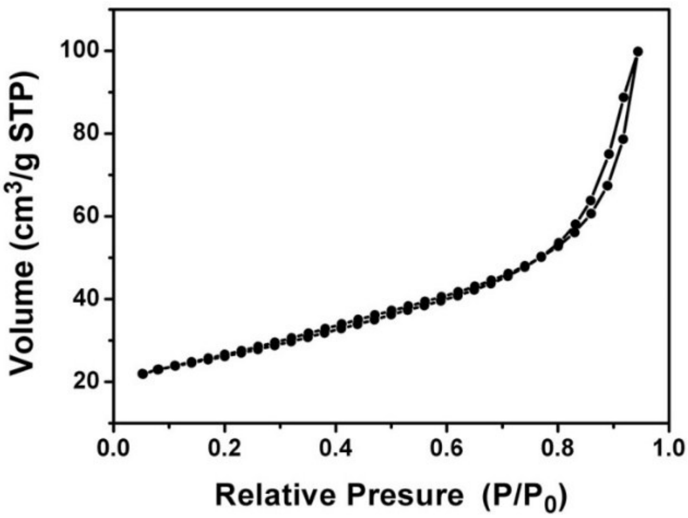

Fig. S6 N_2 adsorption-desorption isotherm of Cu-CDots nanocorals.

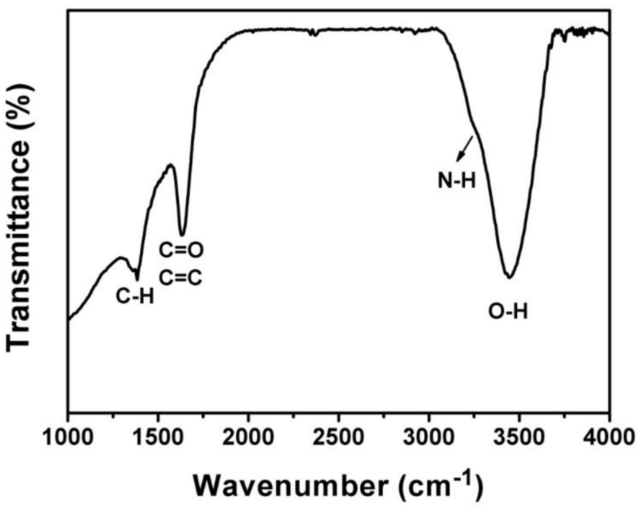

Fig. S7 The FTIR spectrum of Cu-CDots nanocorals.

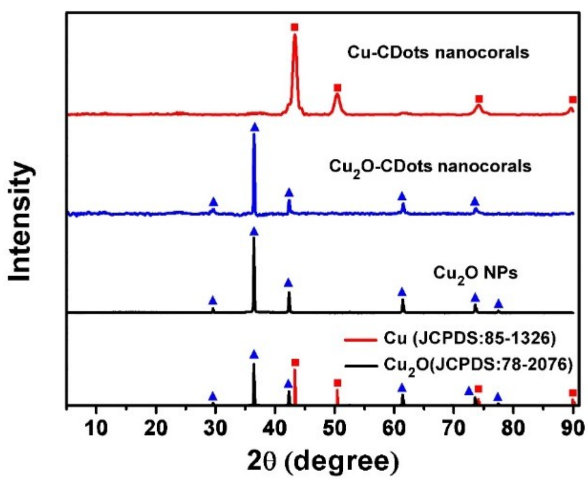

Fig. S8 Large-angle XRD patterns of Cu-CDotsnanocorals (the red trace), Cu_2O-CDots nanocorals (the blue trace) and Cu_2O NPs (black trace). The diffraction peaks of Cu_2O (black trace) can be easily indexed to a pure phase of cuprous oxide (JCPDS card no. 78-2076). The dominant peaks of Cu_2O at 36°, 42° and 61° correspond to lattice planes (111), (200) and (220), respectively. The intense and sharp peaks indicate the high crystallinity of Cu_2O nanocrystals. The XRD spectrum of Cu_2O-CDots nanocorals is almost similar with that of Cu_2O.

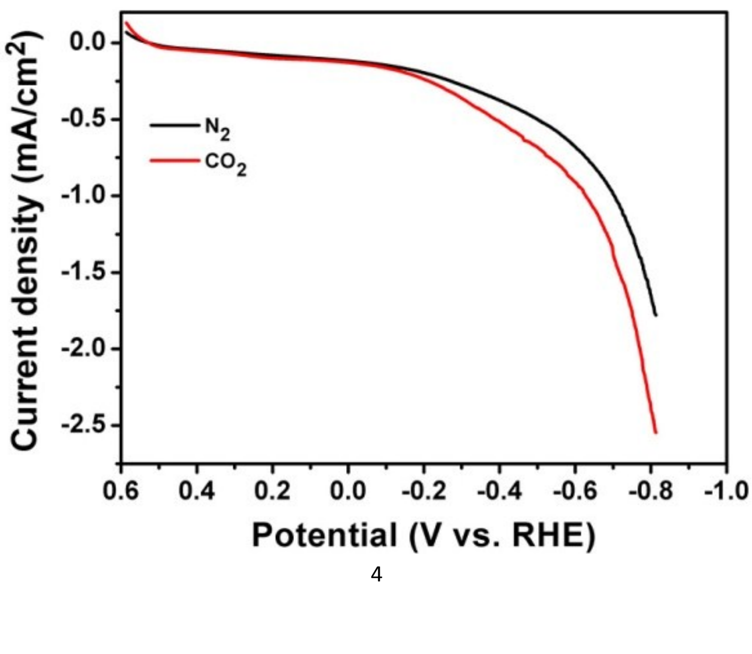

Fig. S9 LSVs for CDots in N2- (black trace) and CO2-saturated (red trace) 0.5 M KHCO3 electrolyte, 10 mV•s^{-1}. The reduced product is only H_2 in N_2- or CO_2-saturated 0.5 M $KHCO_3$ electrolyte.

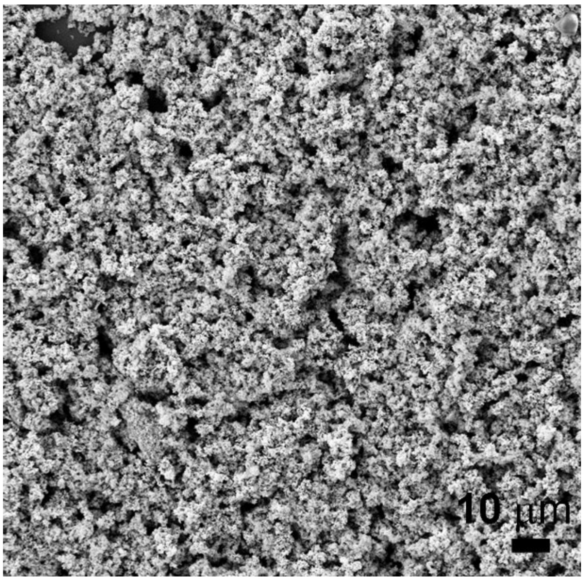

Fig. S10 The SEM image of Cu nanocorals.

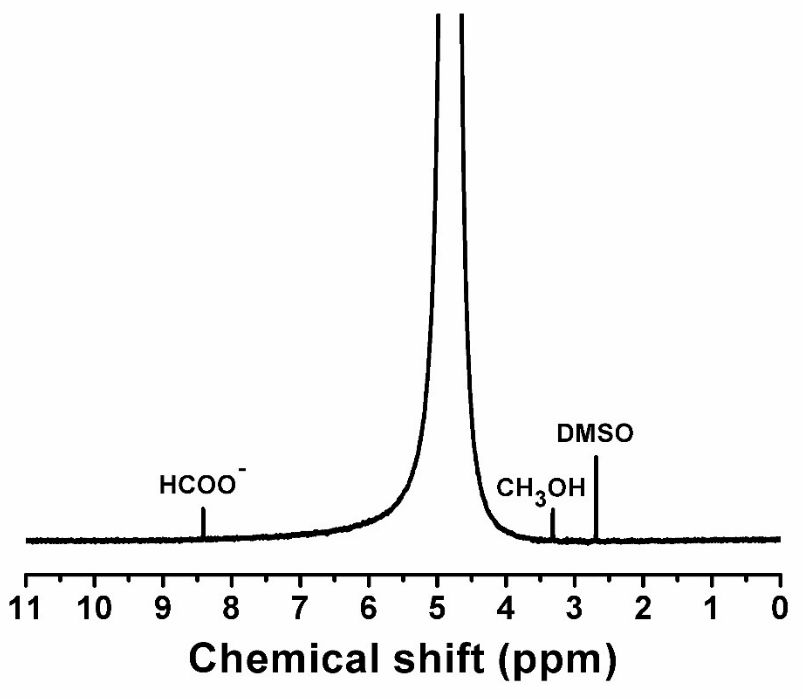

Fig. S11 Representative NMR spectra of the electrolyte after CO_2 reduction electrolysis at -0.6 V *vs.* RHE.