Nano-Micro Letters

Supporting Information for

Highly Efficient Photoelectrocatalytic Reduction of CO_2 to Methanol by a p-n Heterojunction CeO_2/CuO/Cu Catalyst

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Supplementary Figures

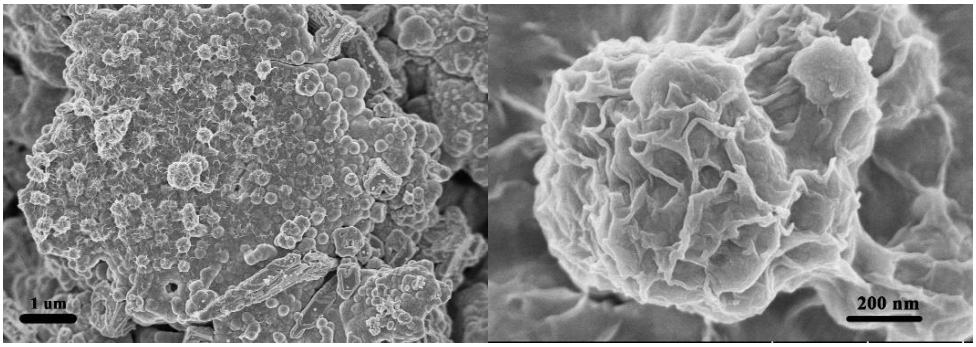

Fig. S1 SEM images of flower-like CeO_2 NPs/CuO NPs

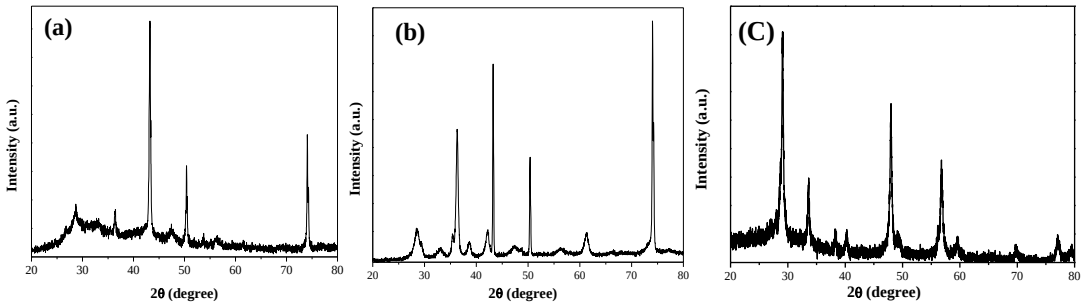

Fig. S2 XRD patterns for **a** CuO **b** flower-like CeO_2 NPs/CuO, and **c** CeO_2 NPs

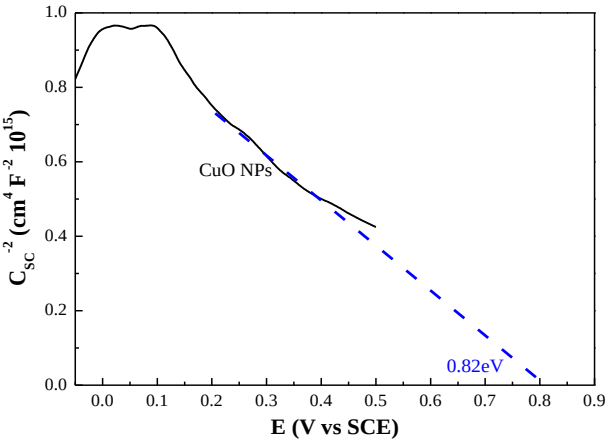

Fig. S3 Mott-Schottky plots for CuO NPs

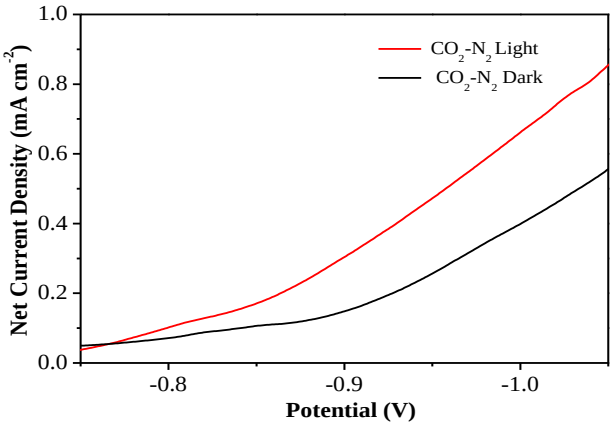

Fig. S4 The net current density of CeO_2 NPs/CuO NPs

Table 1 The XPS results of Ce 3d

Peak Label	Ce Valence state	Peak Characteristics	Binding energy (eV)	Ratio (%)
μ‴	Ce^{4+}	$3d_{3/2}$	912.50	9.84
μ″	Ce^{4+}	$3d_{3/2}$	904.09	5.87
μ′	Ce^{3+}	$3d_{3/2}$	900.46	17.64
μ	Ce^{4+}	$3d_{3/2}$	897.17	17.31
v‴	Ce^{4+}	$3d_{5/2}$	894.29	9.58
v″	Ce^{4+}	$3d_{5/2}$	885.14	5.72
v′	Ce^{3+}	$3d_{5/2}$	881.75	17.18
v	Ce^{4+}	$3d_{5/2}$	878.46	16.86
$Ce^{3+}/(Ce^{4+} + Ce^{3+})$				34.82