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Amorphous Carbon Coating Enhances Activity of High Rate CO_2 Electroreduction to CO

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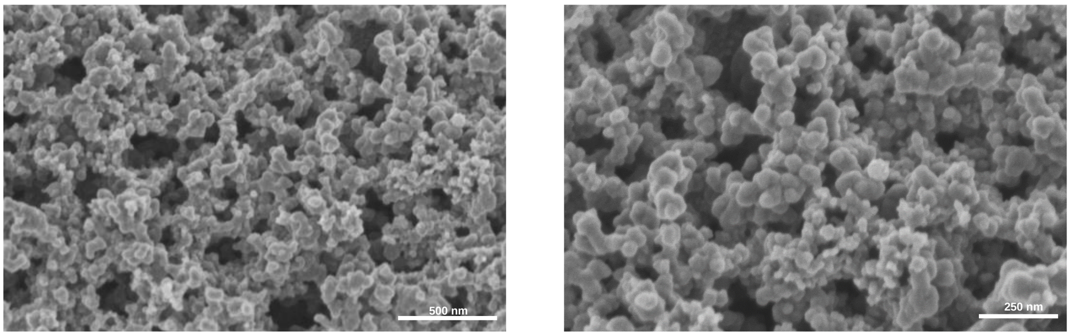

Fig. S1. The scanning electron microscopy images of Ag/C.

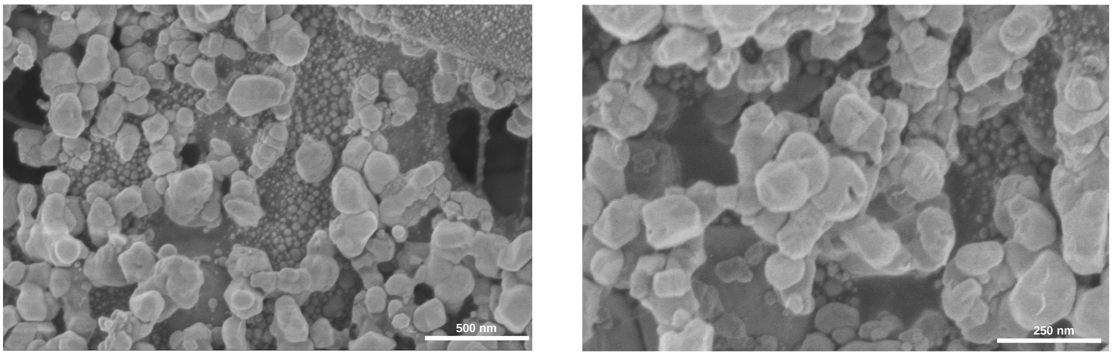

Fig. S2. The scanning electron microscopy images of Ag.

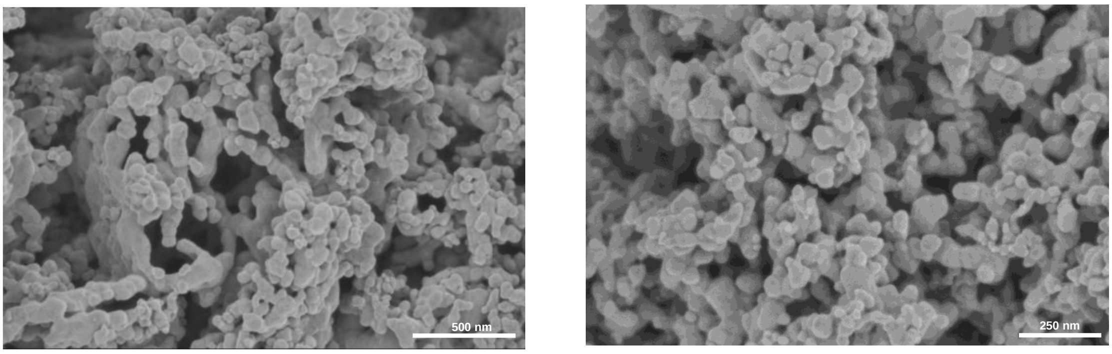

Fig. S3. The scanning electron microscopy images of Ag nano.

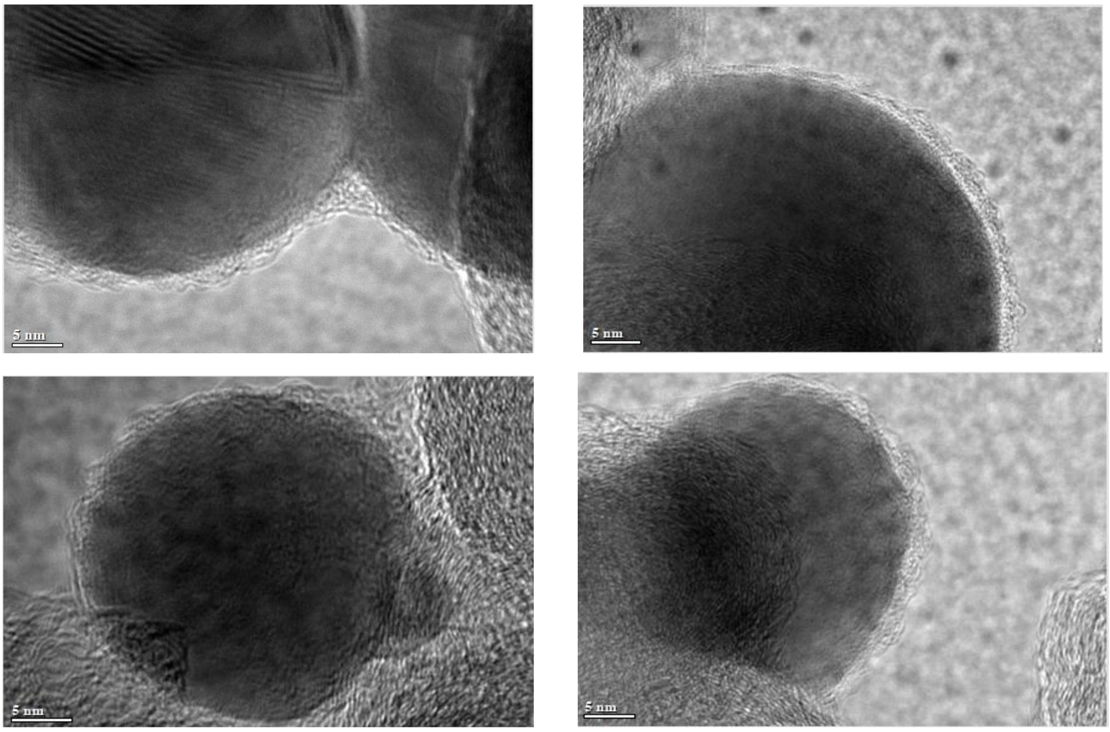

Fig. S4. The different high-resolution transmission electron microscopy images of the Ag/C.

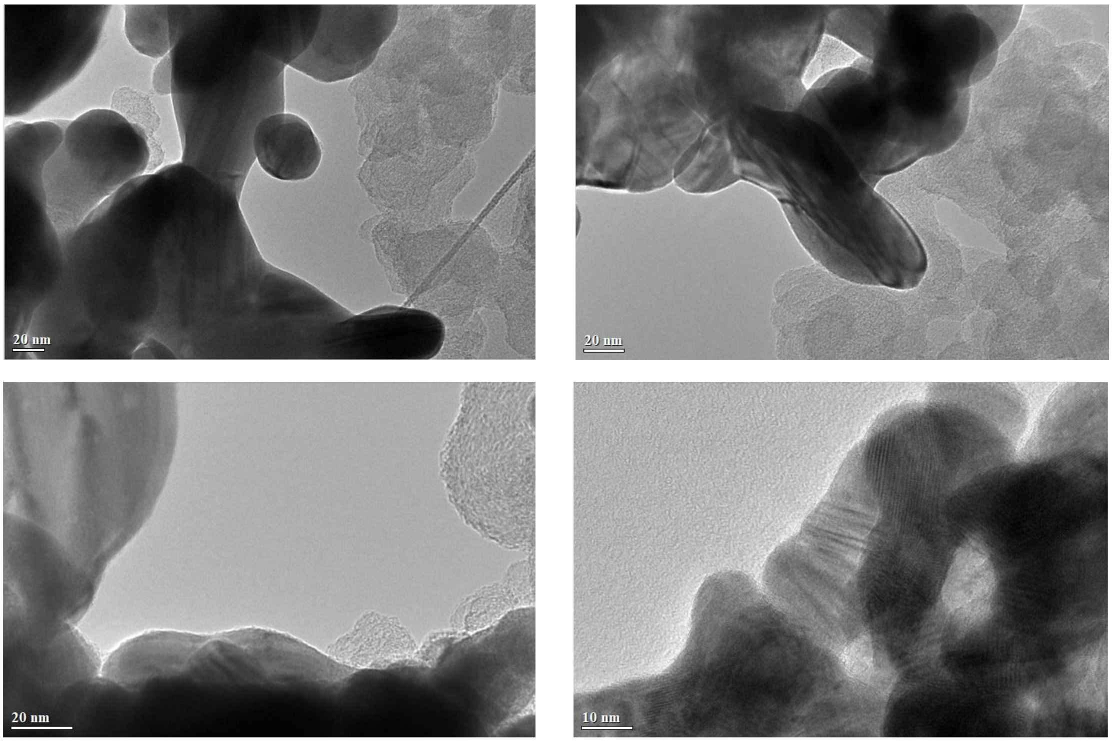

Fig. S5. The different high-resolution transmission electron microscopy images of the Ag-C.

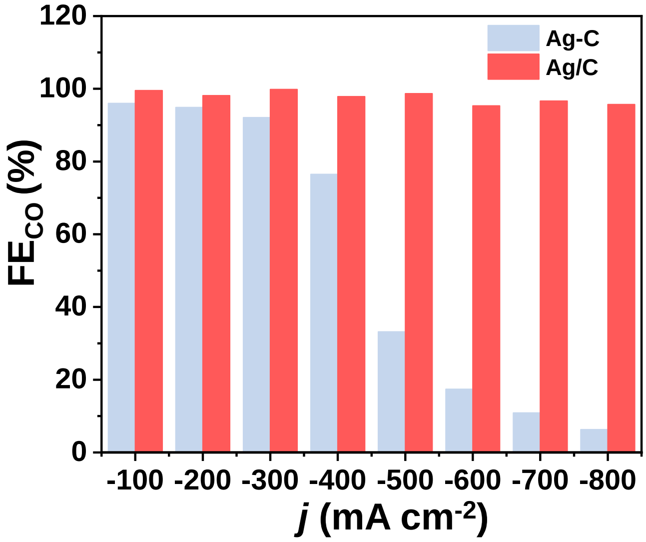

Fig. S6. Faradaic efficiency of CO of the Ag/C and Ag-C catalysts in 1 M KOH.

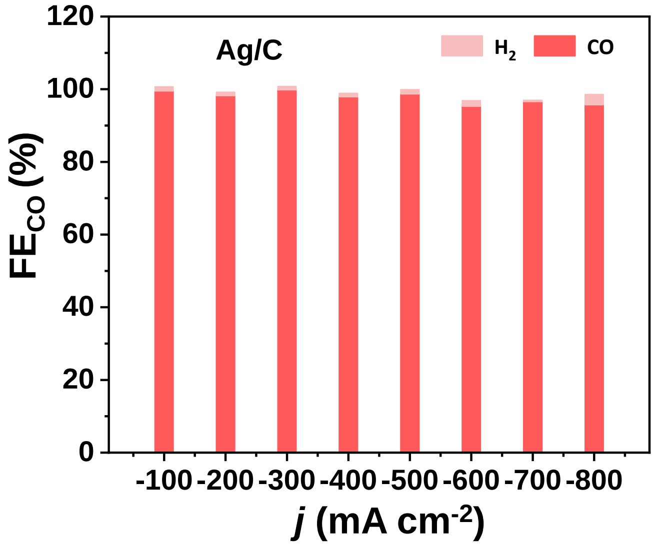

Fig. S7. Faradaic efficiencies of CO and H_2 on the Ag/C in 1 M KOH.

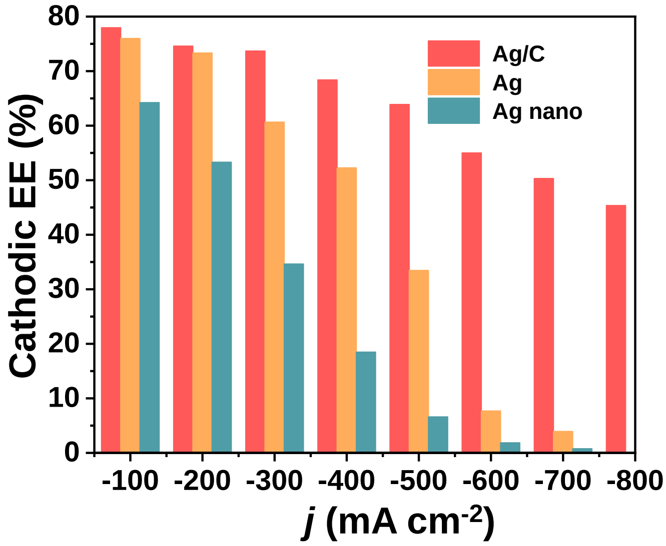

Fig. S8. Cathodic energy efficiency at 700 mA cm^{-2} of Ag nano, Ag, Ag/C in 1 M KOH.

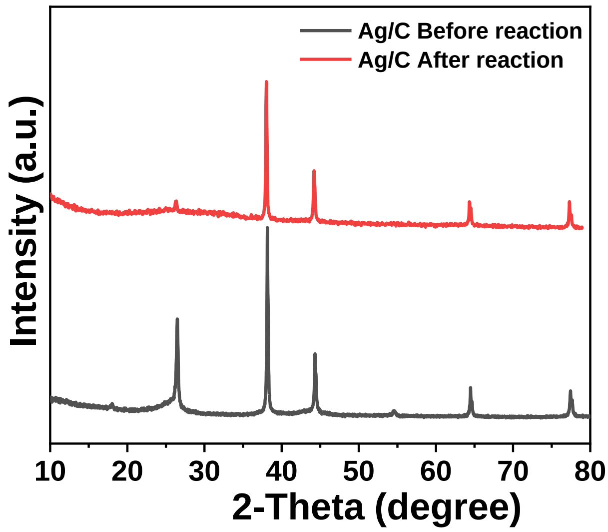

Fig. S9. X-ray diffraction patterns of the Ag/C before and after reaction.

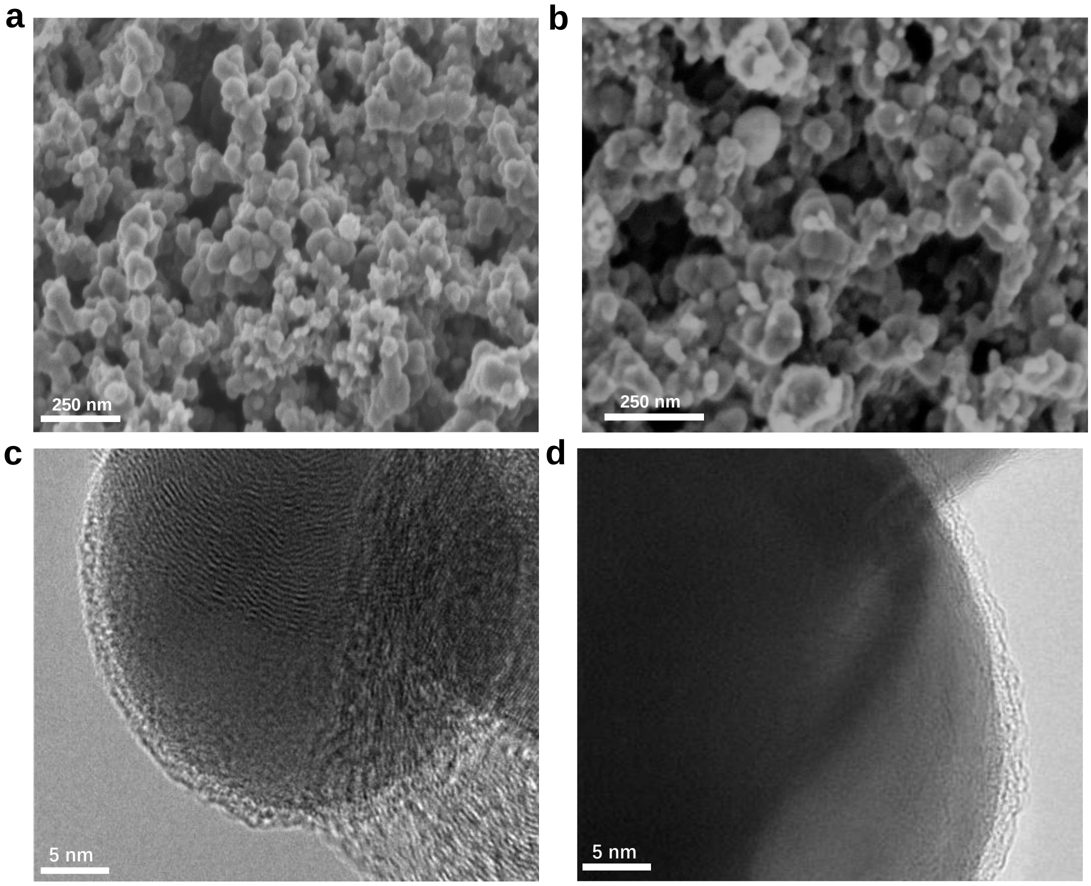

Fig. S10. (a) Scanning electron microscopy and (c) high-resolution transmission electron microscopy images of the Ag/C before reaction. (b) scanning electron microscopy and (d) high-resolution transmission electron microscopy images of the Ag/C after reaction.

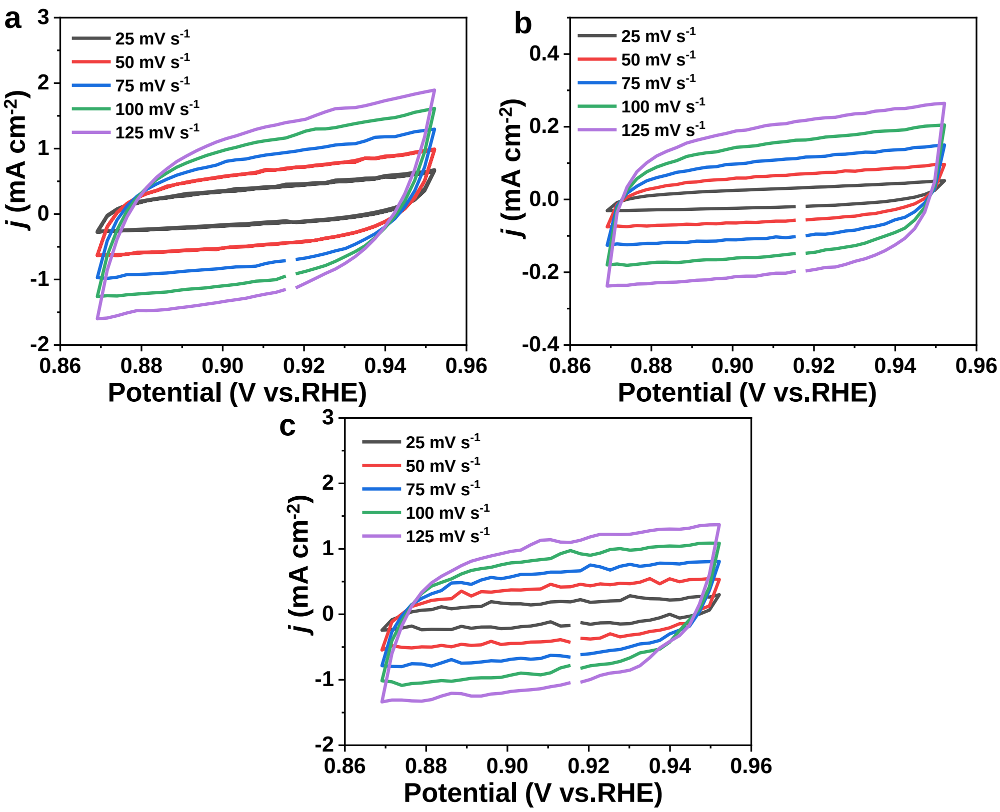

Fig. S11. Cyclic voltammetry curves of Ag nano (a), Ag (b), Ag/C (c) at different scan rates of 25, 50, 75, 100 and 125 mV s^{-1} collected.

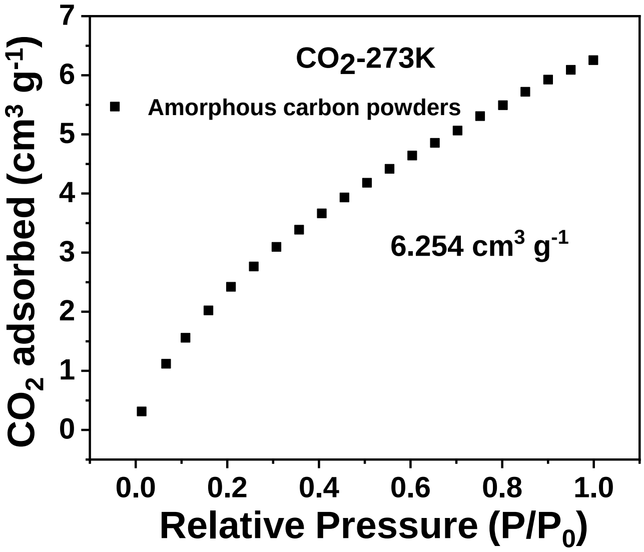

Fig. S12. CO_2 adsorption isotherm curve of amorphous carbon powders.

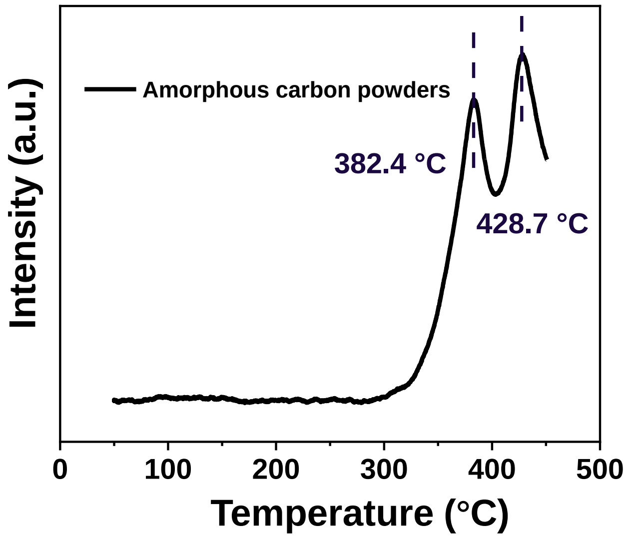

Fig. S13. Temperature programmed desorption of CO_2 measurement (CO_2-TPD) profiles of amorphous carbon powders.

Table S1. The crystal sizes and full width at half maxima (FWHM) values of the (111) plane of the catalysts.

Catalyst	**Crystallite sizes(nm)**	**FWHM**
Ag nano	27.1	0.348
Ag	45.3	0.270
Ag/C	47.5	0.222

Table S2. Parameter values of equivalent circuit components.

Catalyst	**R_S(Ω)**	**R_{ct}(Ω)**
Ag nano	7.189	5.629
Ag	6.802	1.681
Ag/C	6.884	0.644

Table S3. Performance of CO_2 reduced to CO on contrast catalysts.

Catalysts	**j (mA cm^{-2})**	**FE_{CO} (%)**	**References**
Ag/C	**-800**	**95**	**This work**
	-700	**96.6**	
	-600	**95.3**	
Ag powder	-480	91.2	1[1]
Ag/MPL-3C	-100	98.80	2[2]
sputtered Ag/PTFE	-180	89.70	3[3]
Ag/PTFE	-253	84.30	4[4]
Ag NP	-281	97.5	5[5]
Ag NP	-248	94.70	6[6]
Ag/C	-231	83.5	7[7]
Ag DAT	-109	93	8[8]
Ag-NOLI	-500	84	9[9]
AgSn	-200	100	10[10]
AgNP/MWCNT	-368	95	11[11]
Ag-alloyed Zn	-400	72	12[12]
Au25/C	-600	90	13[13]
AuCu	-104	75	14[14]
AuCuB	-76	99	15[15]
MWNT/PyPBI/Au	-267	60	16[16]
h-NiNC	-513	90	17[17]
SbCu	-497	91	18[18]
ZnAg	-500	74	19[19]

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