

氮、硫共掺杂的碳负载的钴@碳化钴：一种高效的非贵金属 氧还原电催化剂

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Cobalt@cobalt Carbide Supported on Nitrogen and Sulfur Co-Doped Carbon: an Efficient Non-Precious Metal Electrocatalyst for Oxygen Reduction Reaction

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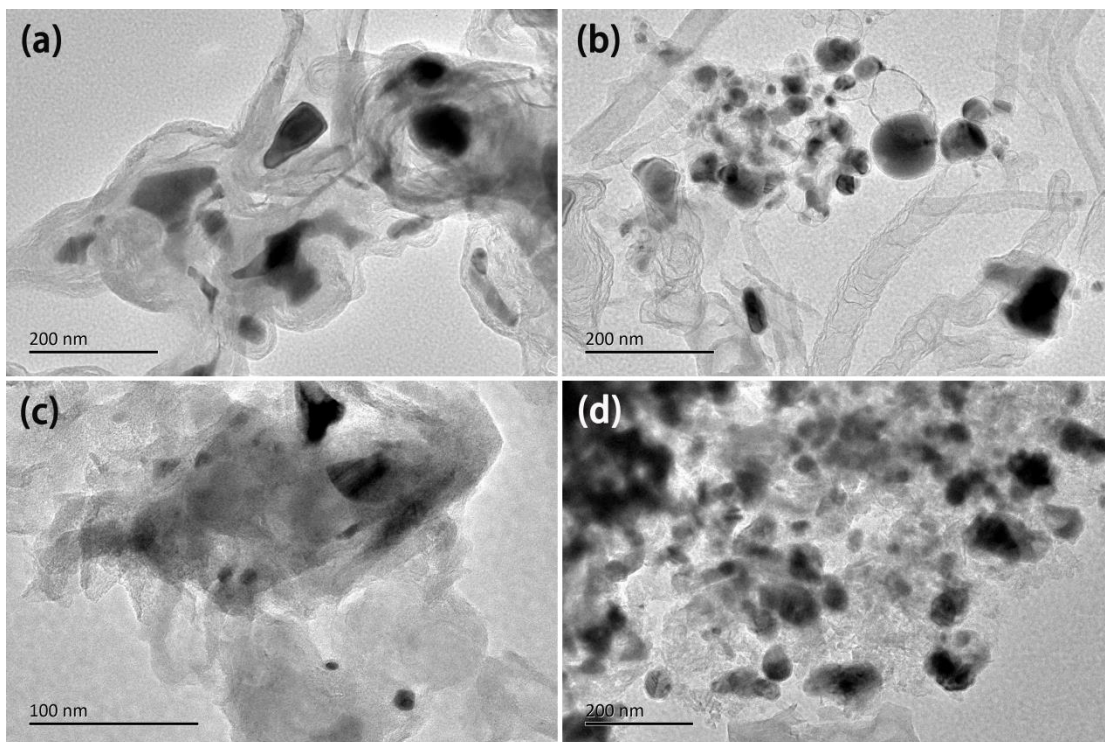


Fig.S1 TEM images of the all samples.

(a) MTC-0.1-850, (b) MTC-0.15-900, (c) MTC-0.05-900, (d) MTC-0.1-950.

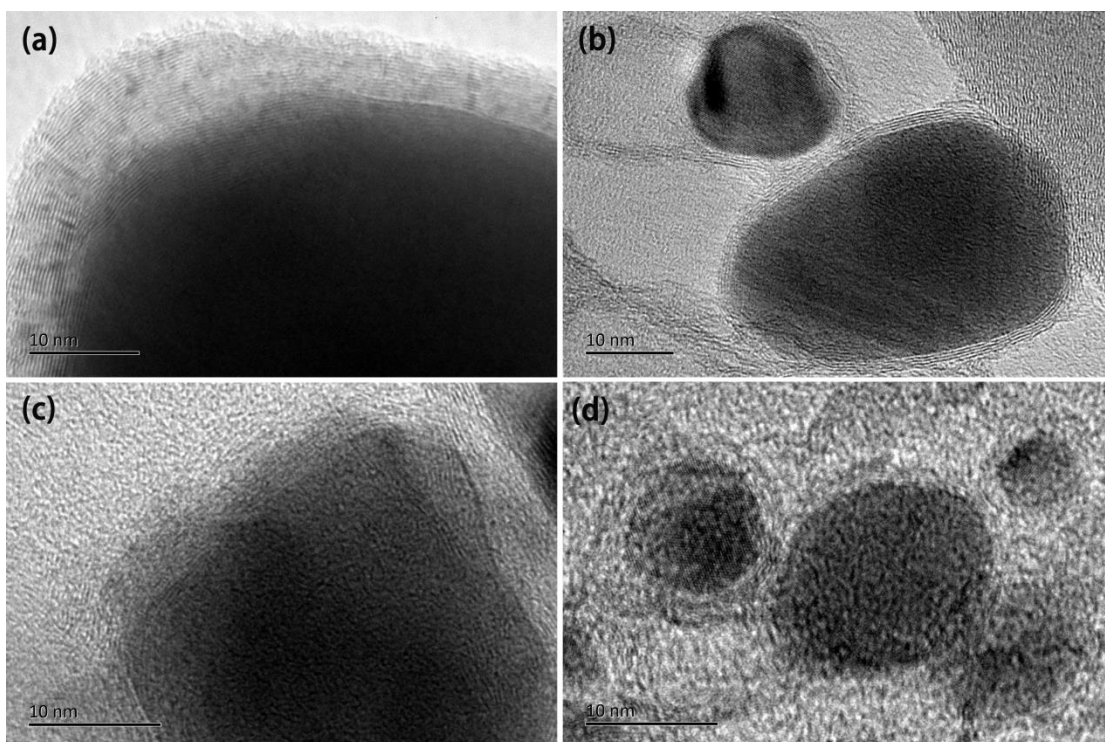


Fig.S2 HR-TEM images of the all samples with graphitic shell: (a) MTC-0.1-850.(b) MTC-0.15-900. (c) MTC-0.05-900. (d) MTC-0.1-950.

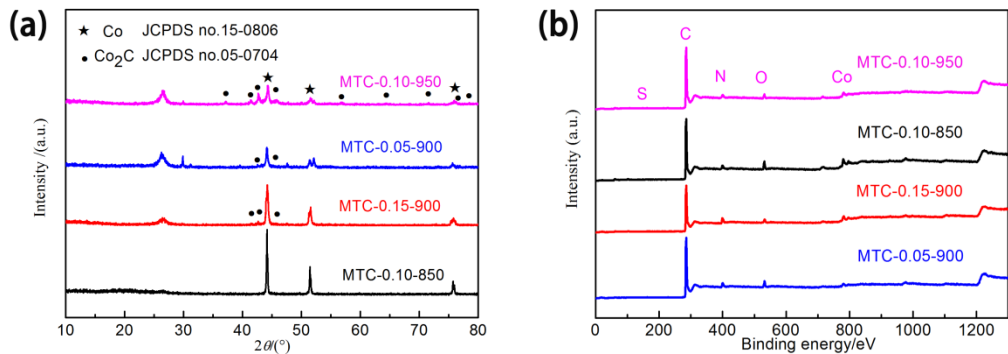


Fig.S3 (a) XRD patterns of MTC-0.1-850, 950, MTC-0.05-900 and MTC-0.15-900. (b)XPS spectra of MTC-0.1-850, 950, MTC-0.05-900 and MTC-0.15-900.

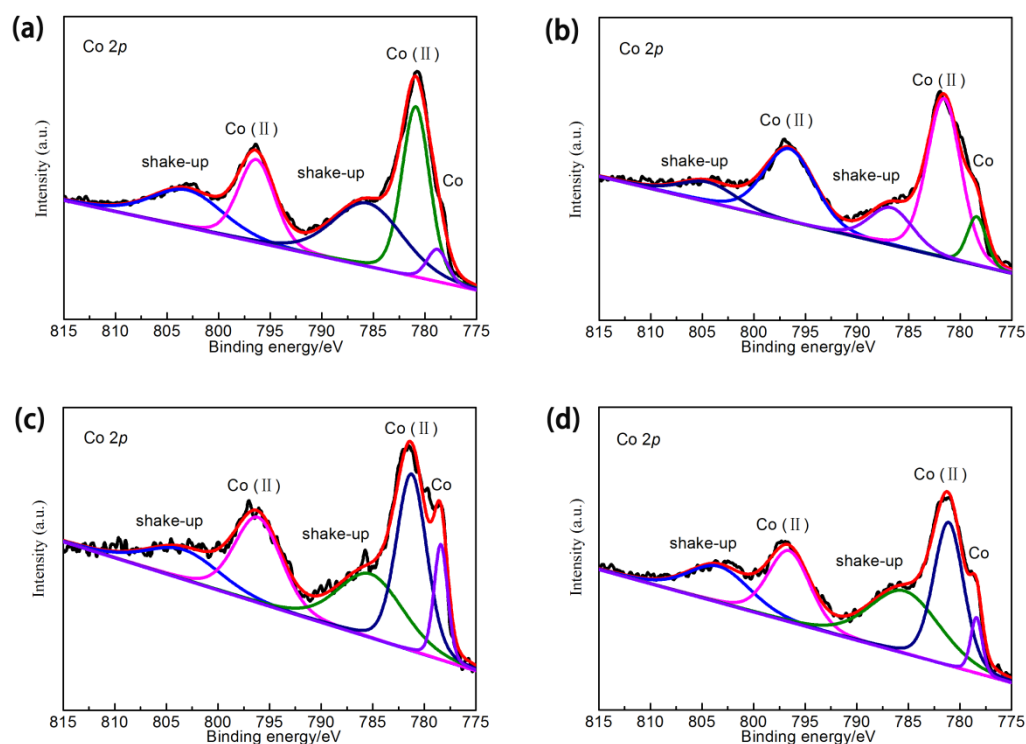


Fig.S4 High resolution of Co 2p: (a) MTC-0.1-850, (b) MTC-0.15-900, (c) MTC-0.05-900 and (d) MTC-0.1-950.

Table S1 Element atomic percentage of all samples

samples	C(%)	N(%)	S(%)	O(%)	Co(%)
MTC-0.1-900	90.1	4.2	0.07	4.46	1.17
MTC-0.15-900	85.85	9.16	0.22	3.38	1.39
MTC-0.05-900	89.07	5.31	0.39	4.61	0.62
MTC-0.1-850	87.54	5.08	0.20	5.42	1.76
MTC-0.1-950	91.94	4.16	0.13	2.72	1.05

Table S2 Element atomic percentage of all samples

samples	Co(%)	Co(II) (%)
MTC-0.1-900	2.55	97.45
MTC-0.15-900	7.31	92.69
MTC-0.05-900	9.23	90.77
MTC-0.1-850	4.23	95.77
MTC-0.1-950	4.45	95.55

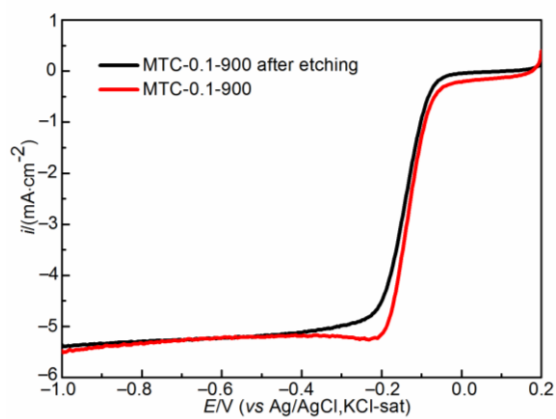


Fig.S5 LSV curves of MTC-0.1-900 at the rotation rate of $1600 \text{ r} \cdot \text{min}^{-1}$ in O_2 saturated 0.1 M KOH before and after acid etching.