

Co_xC-encased carbon nanotube: an efficient oxygen reduction catalyst under both acidic and alkaline conditions

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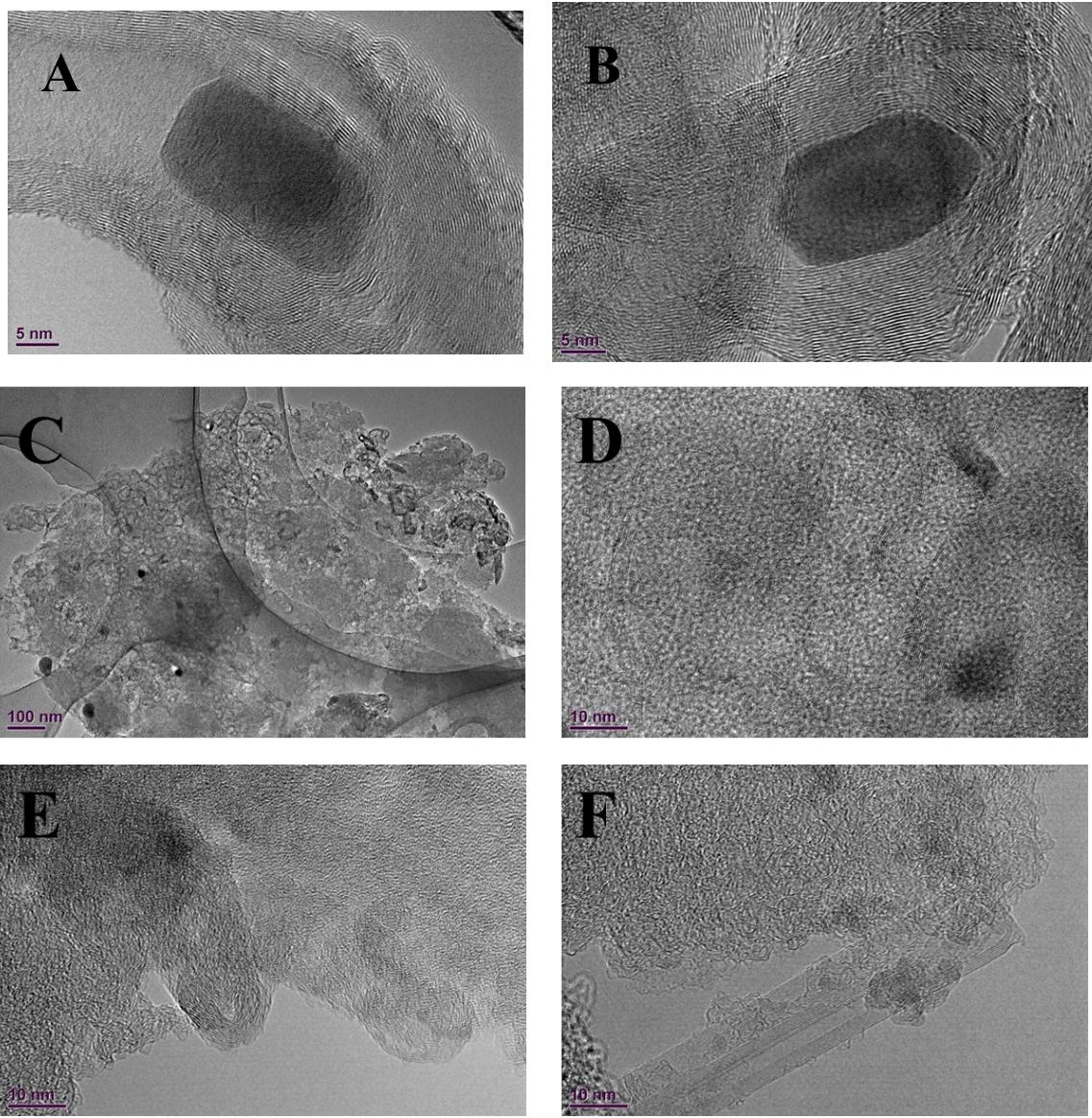
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Figures and captions



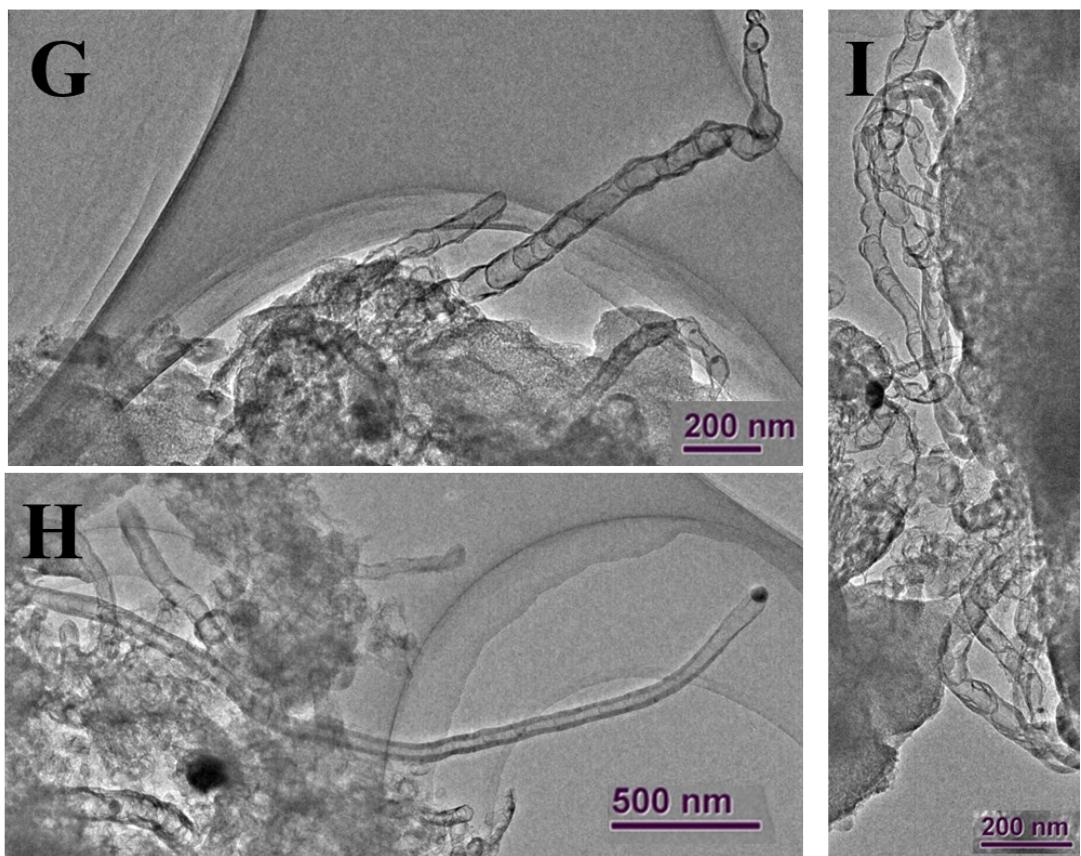


Fig. S1 HRTEM images of $\text{Co}_x\text{C}/\text{C}$ (A~B), TEM of images of $\text{Fe}_x\text{C}/\text{C}$ (C~F) and Ni/C (G~I),

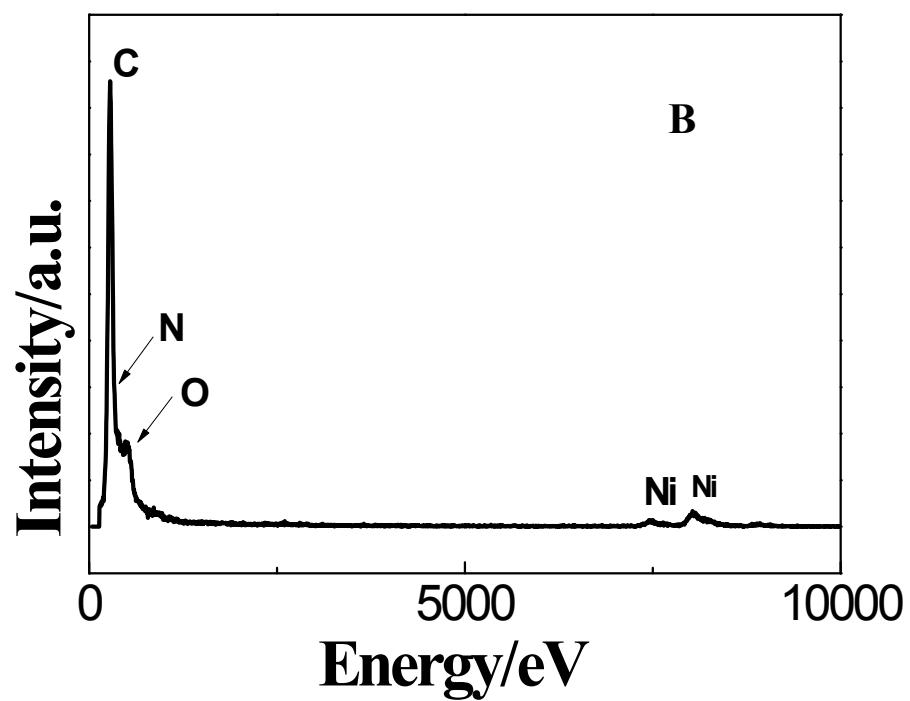
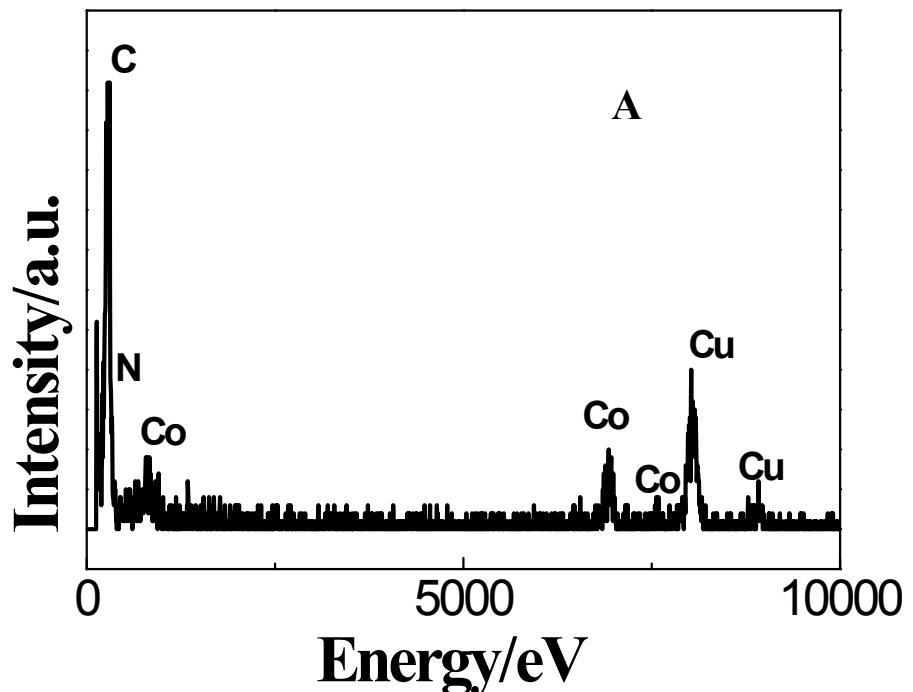


Fig. S2 EDS spectrum of $\text{Co}_x\text{C}/\text{C}$ (A) and Ni/C (B)

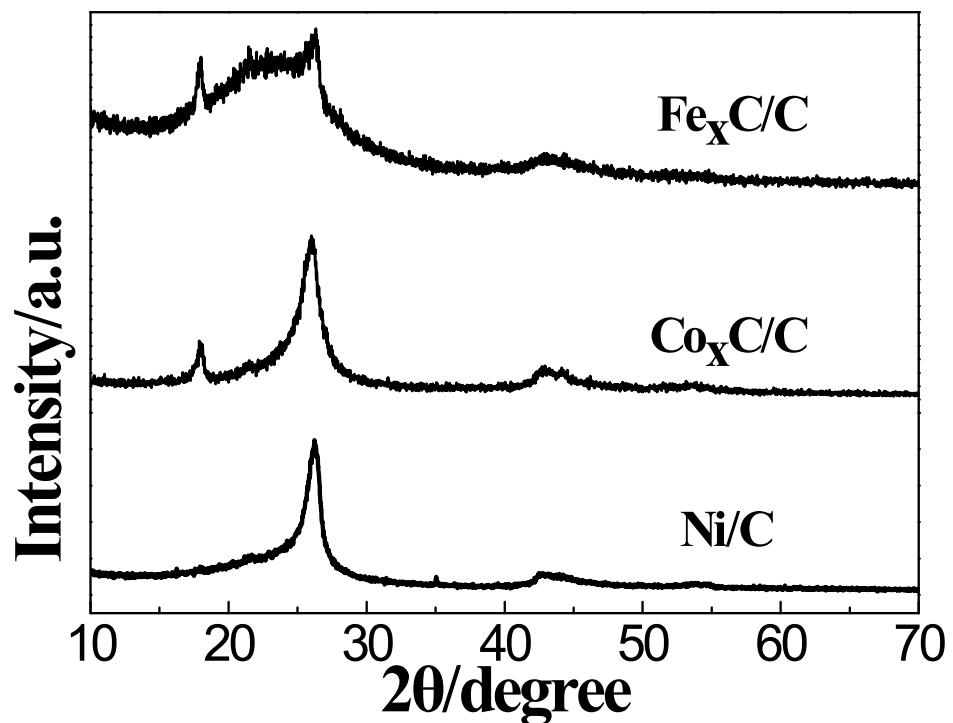


Fig. S3 XRD patterns of the synthesized $\text{Fe}_x\text{C/C}$, $\text{Co}_x\text{C/C}$ and Ni/C

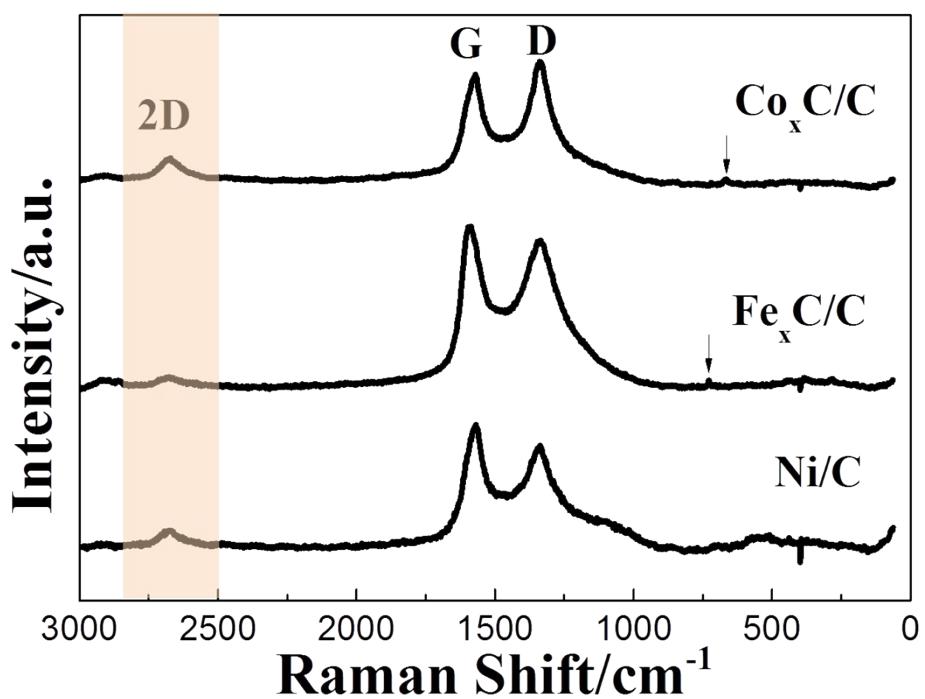


Fig. S4 Raman curves of the synthesized $\text{Co}_x\text{C/C}$, $\text{Fe}_x\text{C/C}$ and Ni/C

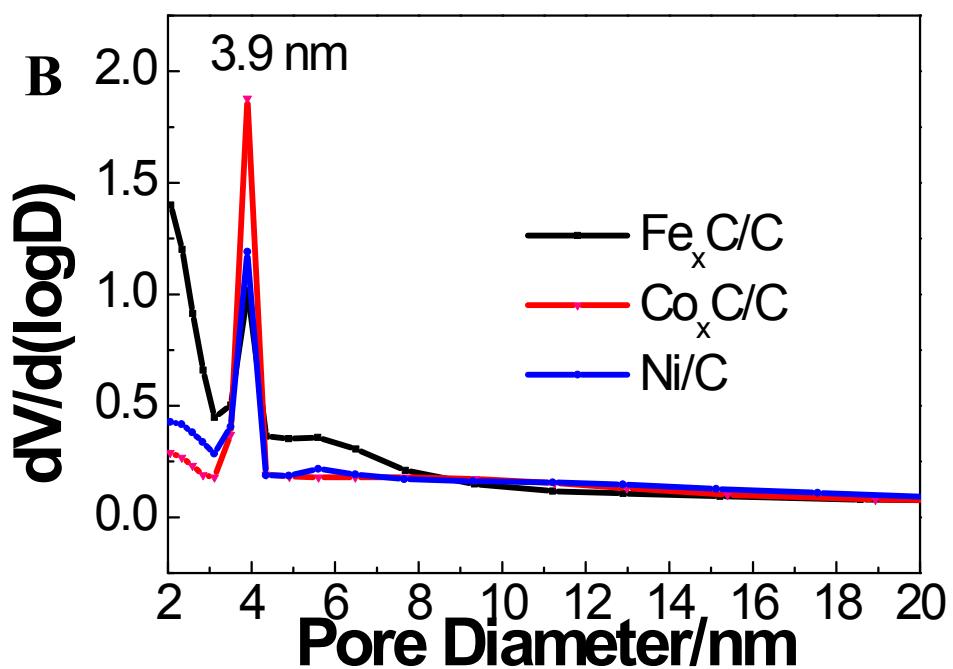
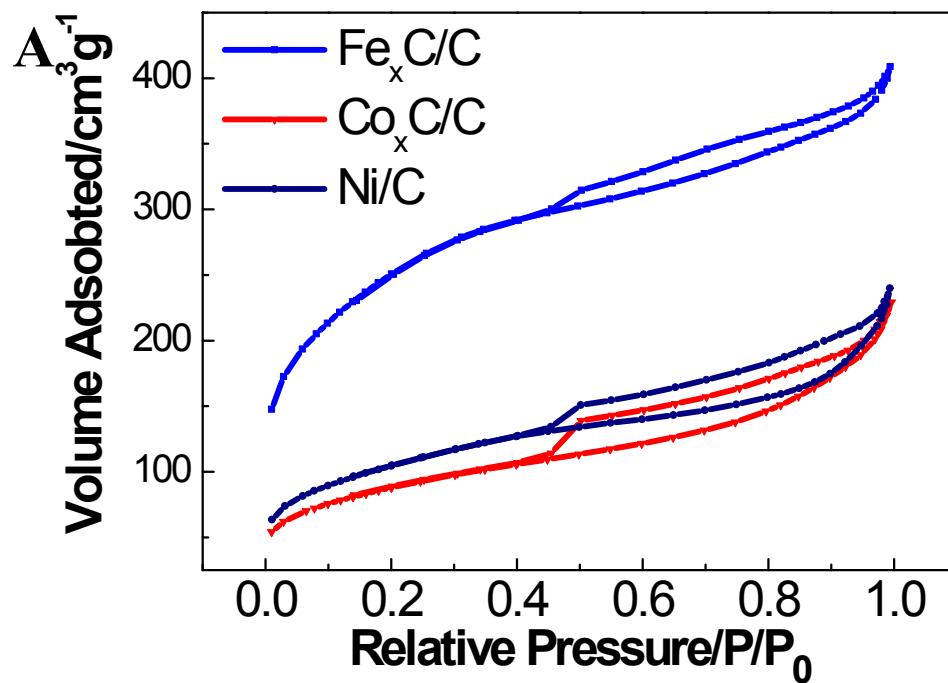


Fig. S5 Nitrogen adsorption-desorption isotherms (A) and the corresponding pore size distributions derived from the desorption branch (B) of the obtained samples

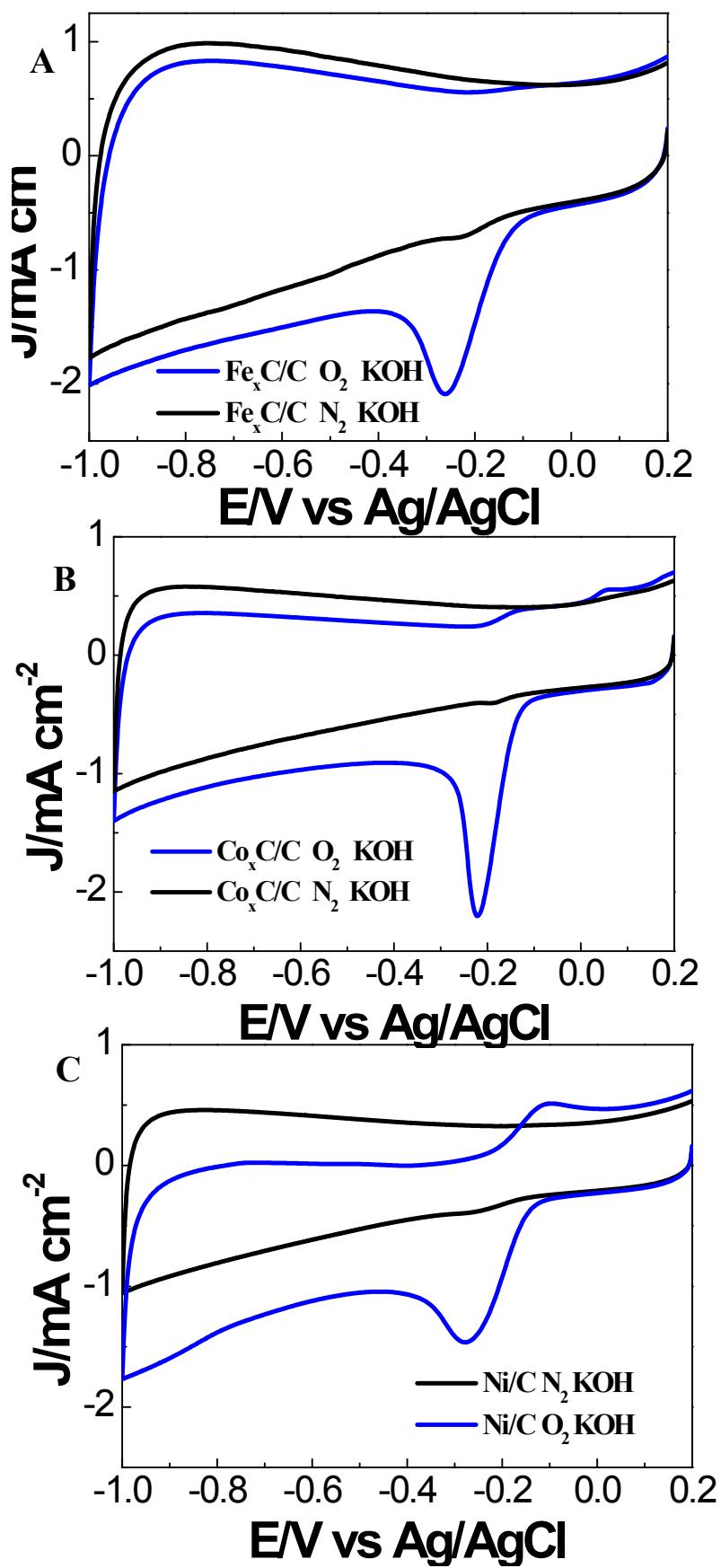


Fig. S6 CV curves of the synthesized samples under oxygen or nitrogen saturated 0.1 M KOH

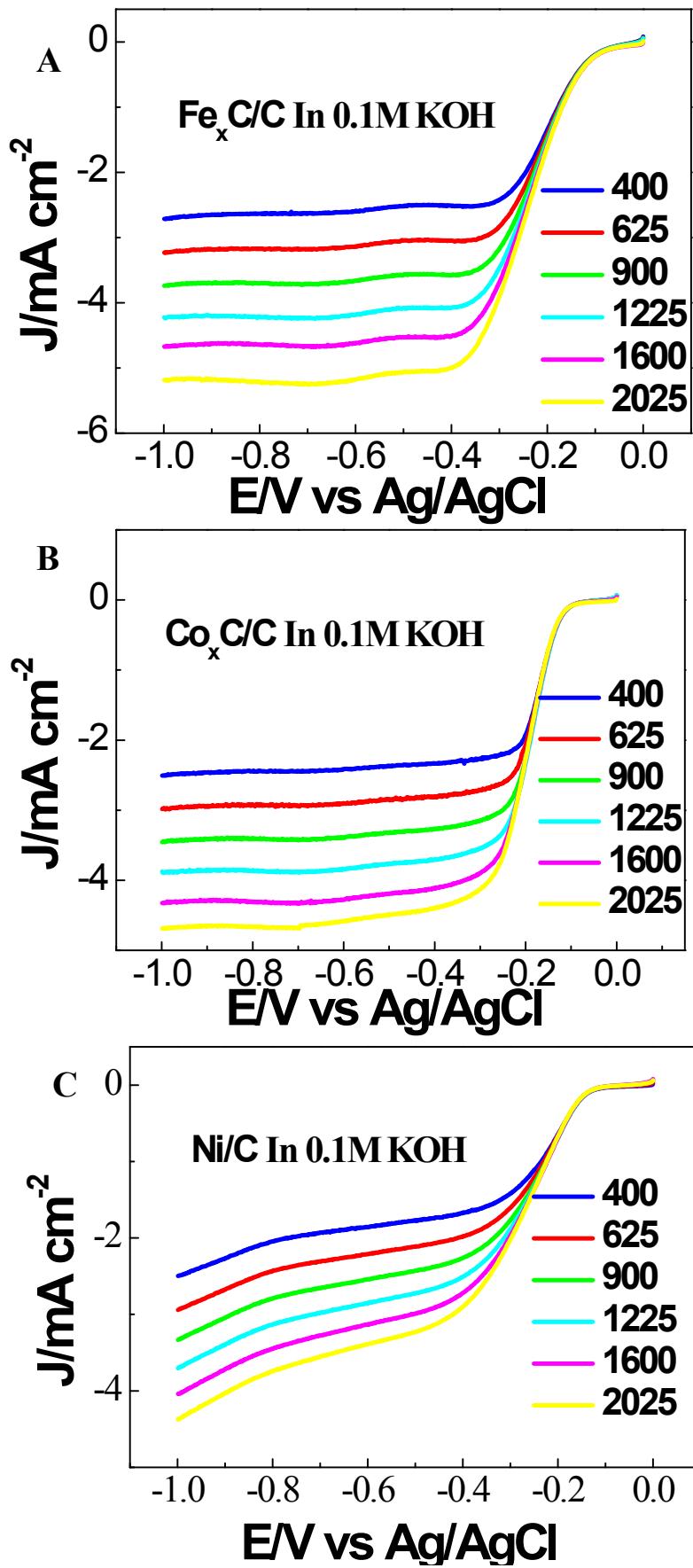


Fig. S7 LSV curves of the synthesized samples at various rotating speed under oxygen saturated 0.1 M KOH

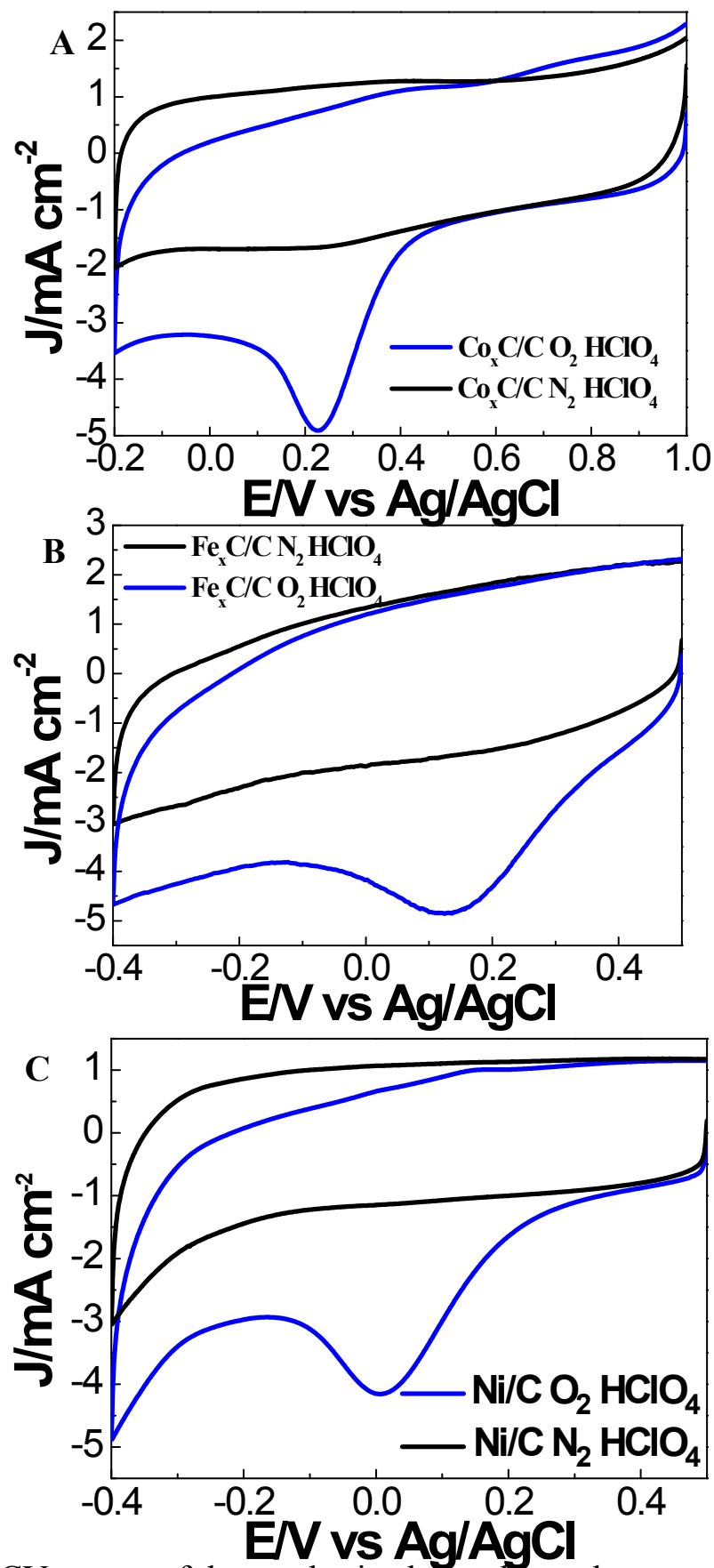


Fig. S8 CV curves of the synthesized samples under oxygen or nitrogen saturated 0.1 M HClO₄

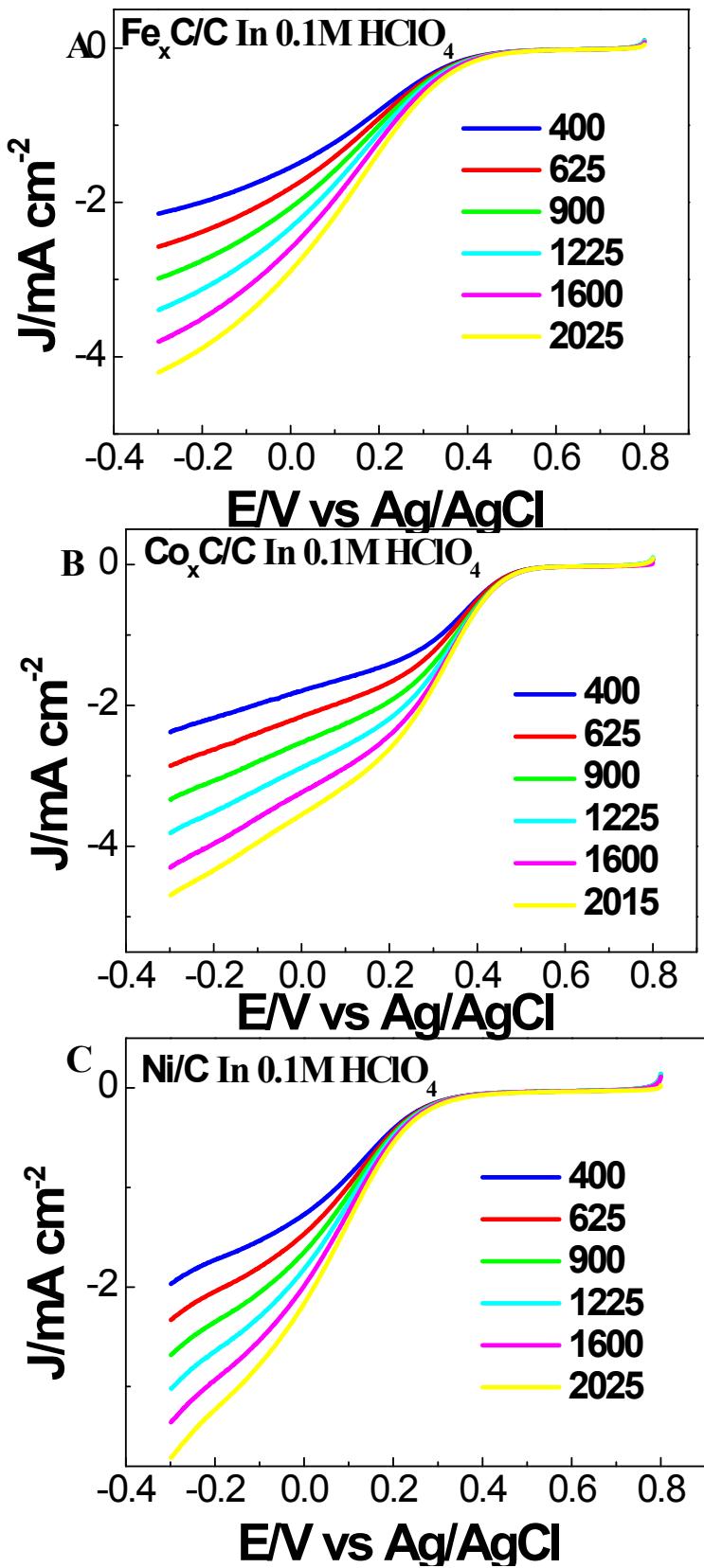
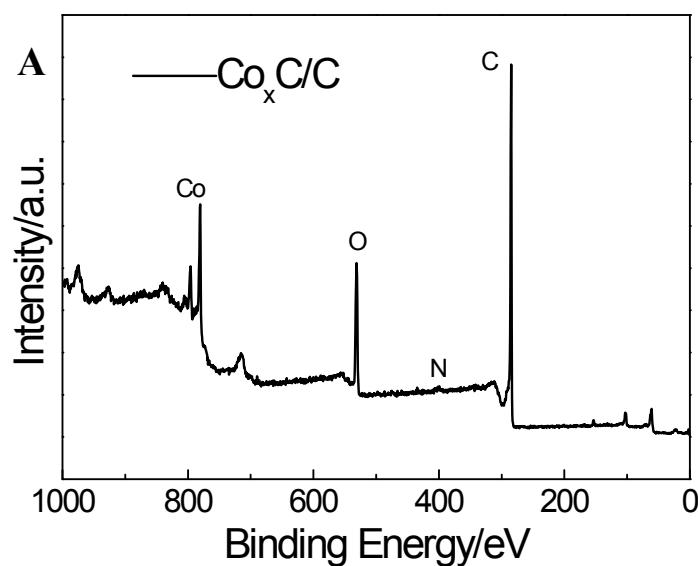


Fig. S9 LSV curves of the synthesized samples at various rotating speed under oxygen saturated 0.1 M HClO_4

Table S1 element composition of the synthesized samples measured by XPS

	C(at.%)	O(at.%)	N(at.%)	M(M=Fe, Co,Ni, (at.%))
Fe _x C/C	89.71	8.52	1.19	0.58
Co _x C/C	72.99	20.28	1.1	5.64
Ni/C	86.39	9.62	2.02	1.96



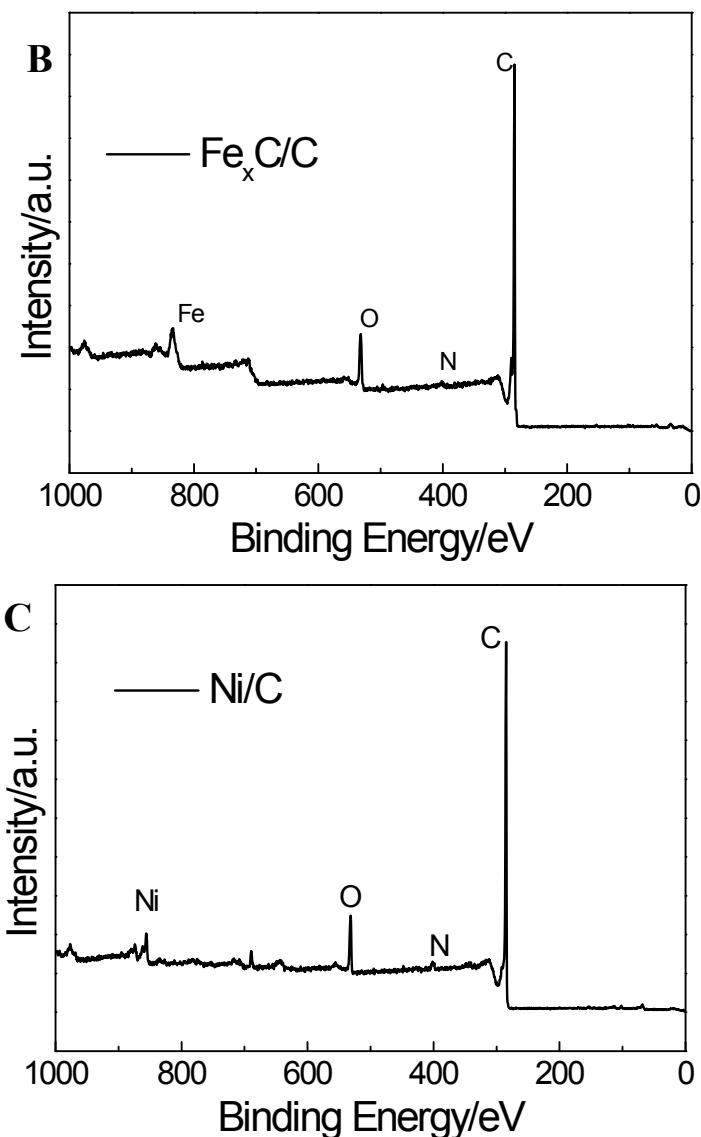


Figure S10.XPS survey spectrum of the synthesized samples