Electronic Supplementary Material (ESI) for Dalton Transactions.

Chlorine-doped α-$Co(OH)_2$ hollow nanododecahedrons prepared by a ZIF-67 self-sacrificing template route and enhanced OER catalytic activity

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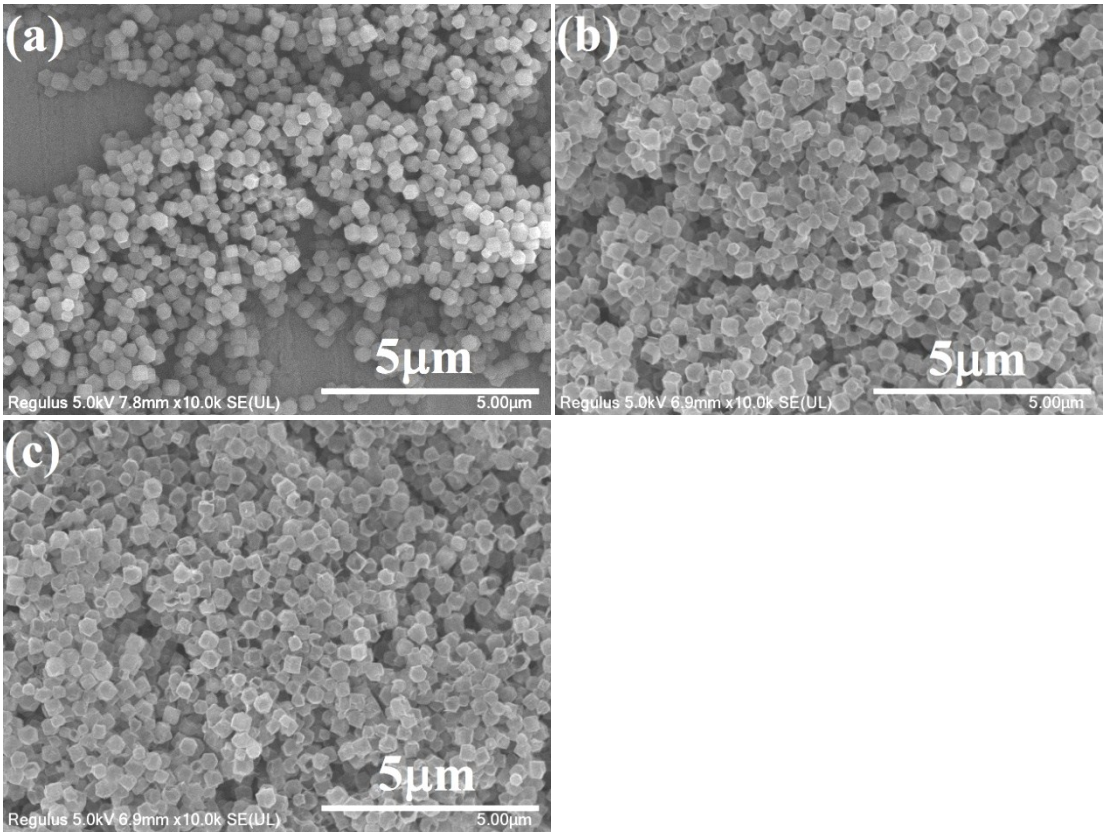

Fig.S1 Low-magnification FESEM images of ZIF-67 nanododecahedrons (a), the final products obtained in the absence (b) and presence (c) of NaCl at 40 °C for 4 h.

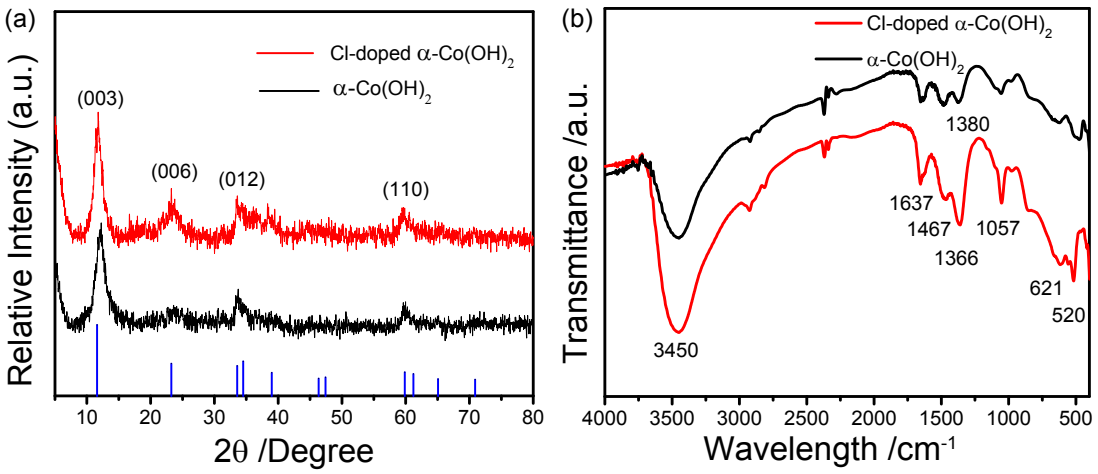

Fig.S2 (a) XRD patterns and (b) IR spectra of the as-prepared α-$Co(OH)_2$ and Cl-doped α-$Co(OH)_2$.

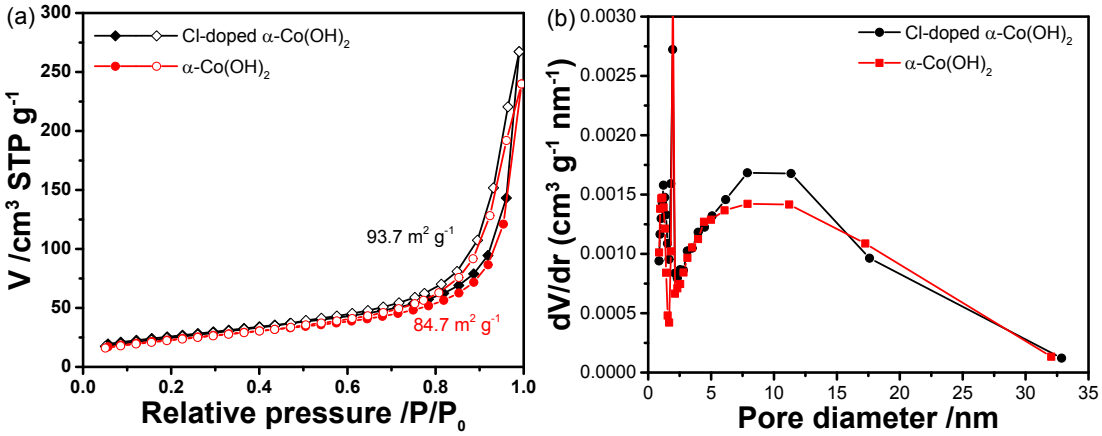

Fig.S3 (a) N_2 adsorption-desorption isotherms and (b) BJH pore size distributions of α-$Co(OH)_2$ and Cl-doped α-$Co(OH)_2$.

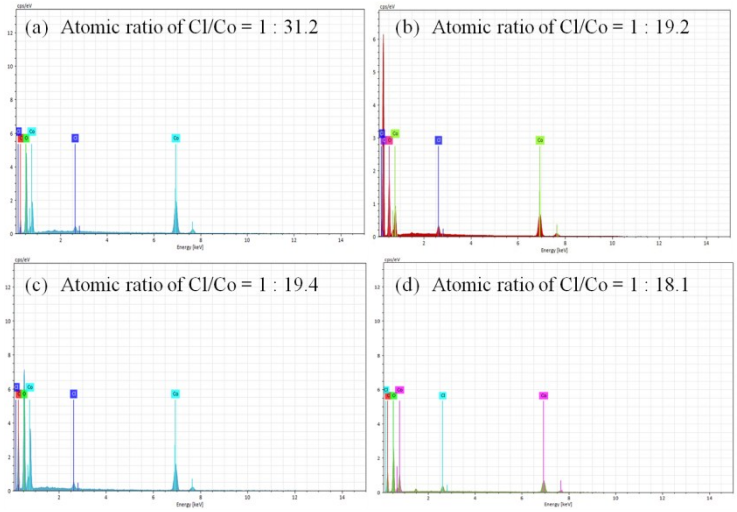

Fig.S4 EDS analyses of Cl-doped α-$Co(OH)_2$ catalysts prepared from the systems with different amounts of NaCl under the same experimental conditions: (a) 30, (b) 50, (c) 100 and (d) 200 mg.

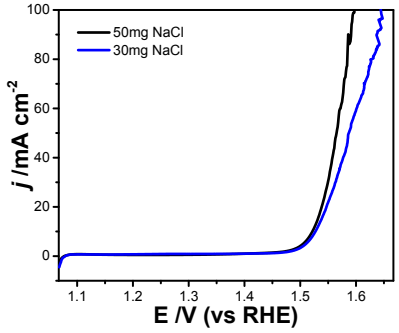

Fig.S5 LSV curves of the catalysts prepared from the systems with the NaCl amount of 30 and 50 mg, respectively.

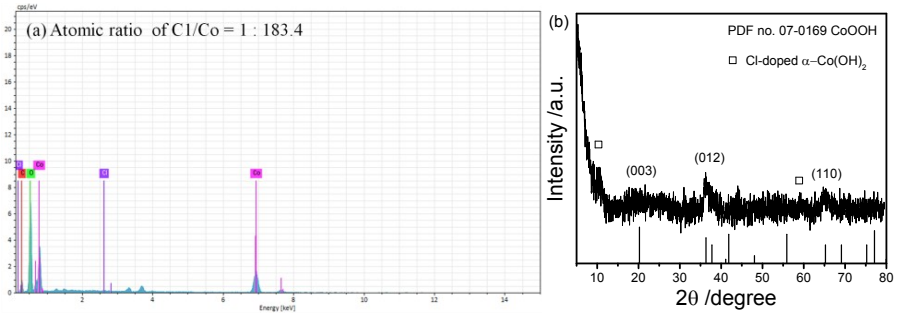

Fig.S6 (a) EDS analysis and (b) XRD pattern of Cl-doped α-$Co(OH)_2$ catalyst after the first activation at the scan rate of 100 mV s^{-1} in 1 M KOH solution.

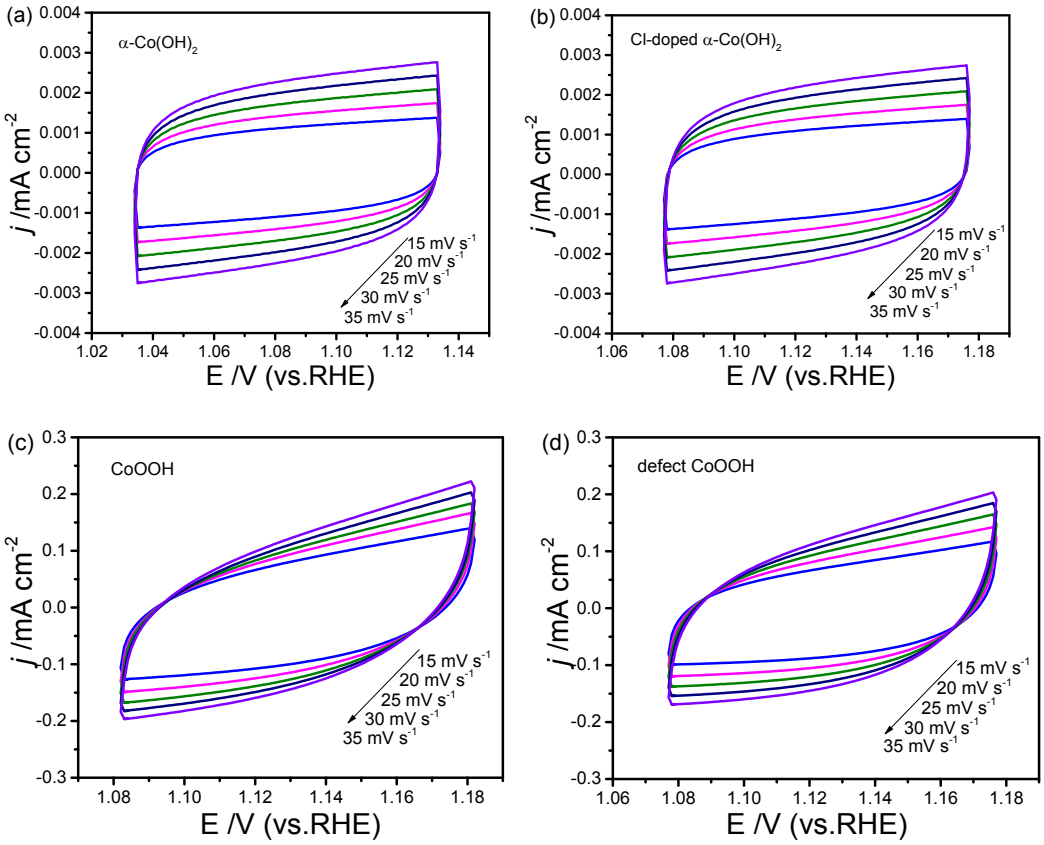

Fig.S7 CV curves of various electrodes in the potential window over a narrow range (±50 mV) centered on the open circuit potential (OCP) in CH_3CN with 0.15 M KPF_6 at the scan rates of 15, 20, 25, 30 and 35 mV s^{-1}, respectively: (a) α-$Co(OH)_2$/GCE, (b) Cl-doped α-$Co(OH)_2$/GCE, (c)

CoOOH/GCE and (d) defect CoOOH/GCE.

Table S1. The electrochemical double-layer capacitance (C_{dl}) and electrochemical active surface area (ECSA) of as-prepared catalysts before and after continuously catalyzing for 40 h.

Catalysts	C_{dl} (mF cm^{-2})	ECSA (= C_{dl} /C_s)
Cl-doped α-$Co(OH)_2$	0.062	5.64
α-$Co(OH)_2$	0.063	5.73
defect CoOOH	2.67	242.7
CoOOH	2.25	204.5

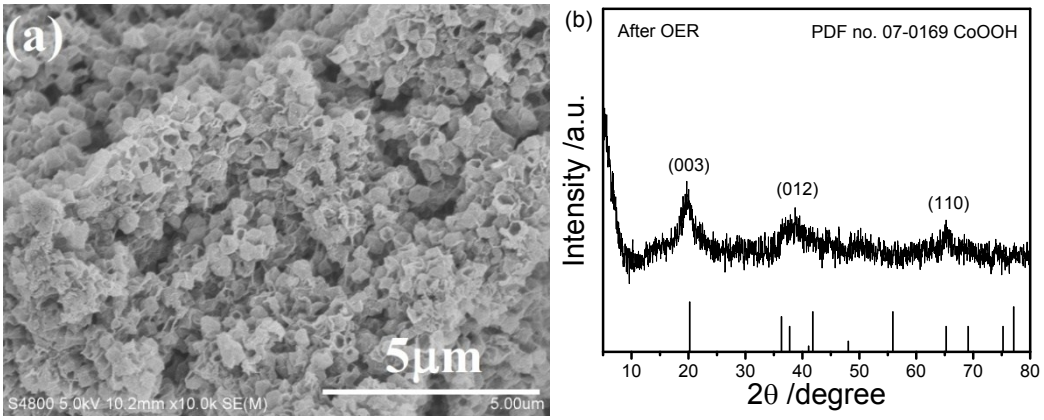

Fig.S8 FESEM image (a) and XRD pattern (b) of Cl-doped α-$Co(OH)_2$ catalyst after continuously catalyzing 40 h in 1 M KOH solution at the current density of 10 mA cm^{-2}.