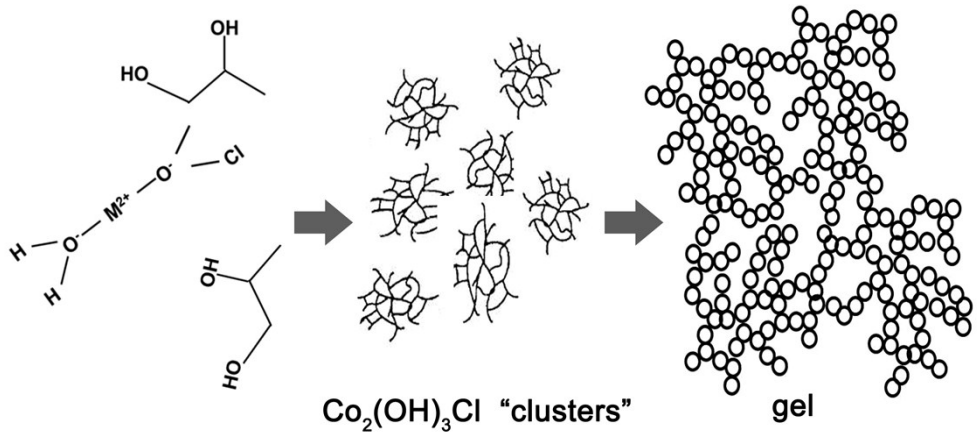
Electronic Supplementary Material (ESI) for Journal of Materials Chemistry A.

Supporting Information



Schema 1 Sol-gel forming process of $Co_2(OH)_3Cl$ xerogels.

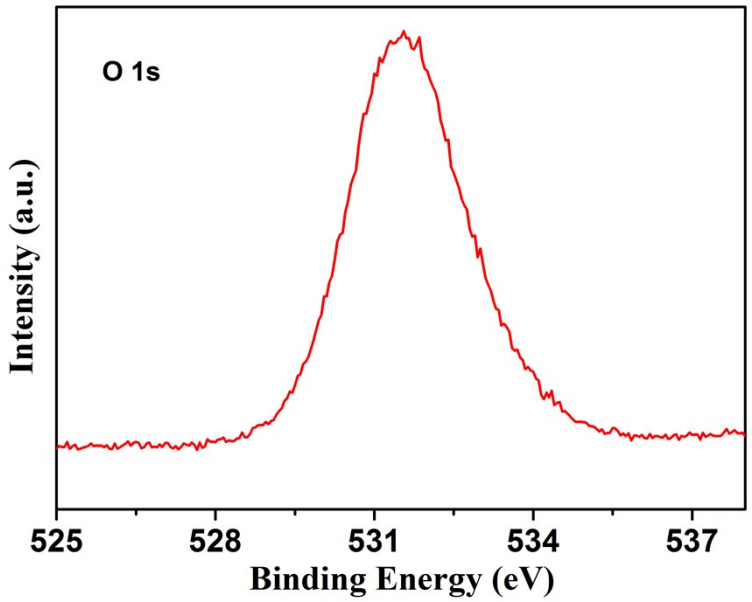


Figure S1 O1s energy spetrum of 4%Mn-$Co_2(OH)_3Cl$ xerogel.

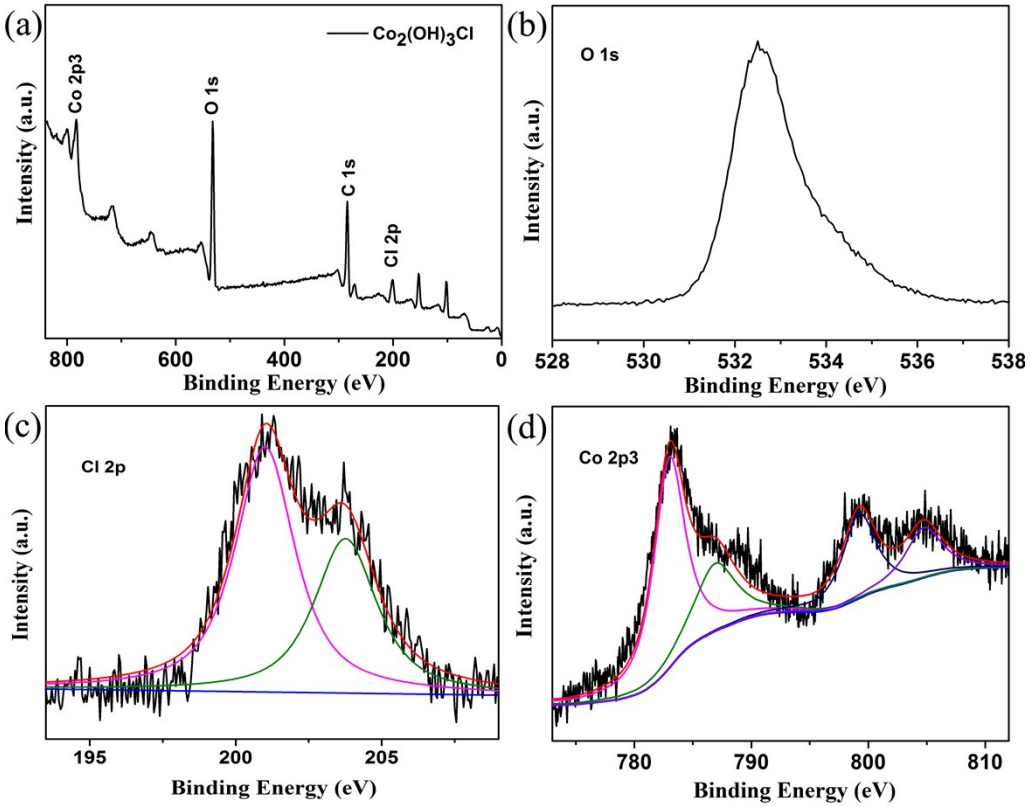


Figure S2 XPS spectra of $Co_2(OH)_3Cl$ xerogel: a) survey spectrum, (b) O 1s, (C) Cl 2p , and (d) Co 2p energy spectrum.

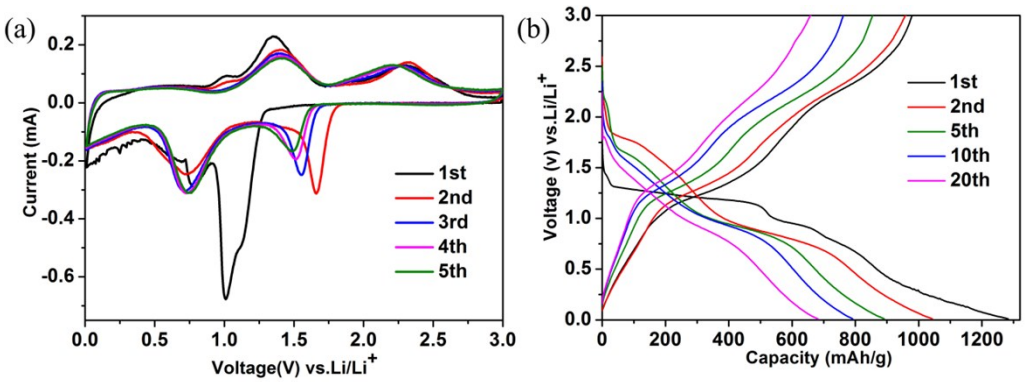


Figure S3 (a) Cyclic voltammetric (CV) curves of the first five cycles in the potential range of 0–3 V at a scan rate of 0.1 mV s^{-1} and (b) the charge-discharge curves between 0.01 and 3.0 V at the current of 100 mA·g^{-1} for pure $Co_2(OH)_3Cl$ xerogel xerogel.

Table S1 Textural parameters of the Mn doped and undoped $Co_2(OH)_3Cl$.

sample	BET surface area(m^2g^{-1})	Pore diameter (nm)	Total pore volume(cm^3g^{-1})
0%Mn doped	92.4	33.36	1.076
4%Mn doped	117.32	33.64	1.197
8%Mn doped	119.28	34.23	1.326

Table S2 Comparison of the electrochemical properties of the present $Co_2(OH)_3Cl$, Mn doped $Co_2(OH)_3Cl$ xerogel samples and previous pure $Co_2(OH)_3Cl$, H_3NOHCl, $Co(OH)_2$ and $CoCl_2$ materials.

Materials	Initial capacity (mA h g^{-1})	Capacity (mA h g^{-1})	Reference
$Co_2(OH)_3Cl$	1282.7 (100 mA g^{-1})	640 (100 mA g^{-1}, 50 cycles)	This paper
4%Mn-$Co_2(OH)_3Cl$	1965.9 (100 mA g^{-1})	1376.5 (100 mA g^{-1}, 50 cycles)	This paper
$Co_2(OH)_3Cl$	1719 (200 mA g^{-1})	407 (200 mA g^{-1}, 50 cycles)	21
H_3NOHCl	2143.4 (50 mA g^{-1})	676.1(50 mA g^{-1}, 30 cycles)	39
$Co(OH)_2$	1558 (200 mA g^{-1})	400 (200 mA g^{-1}, 30 cycles)	14
$Co(OH)_2$	909 (58 mA g^{-1})	63 (58 mA g^{-1}, 50 cycles)	51
$CoCl_2$	780 (1 C)	375 (1 C, 50 cycles) (1C =407.5)	17

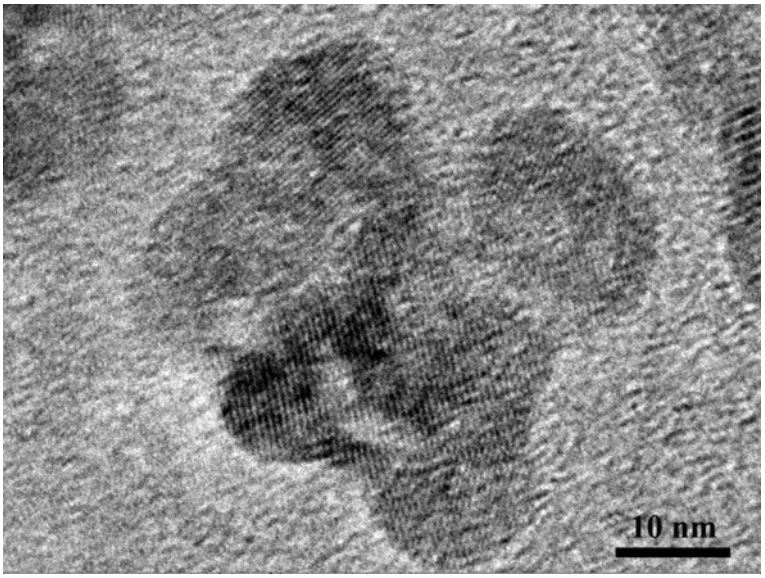


Figure S3. The TEM image of 0% Mn doped $Co(OH)_2Cl_3$.

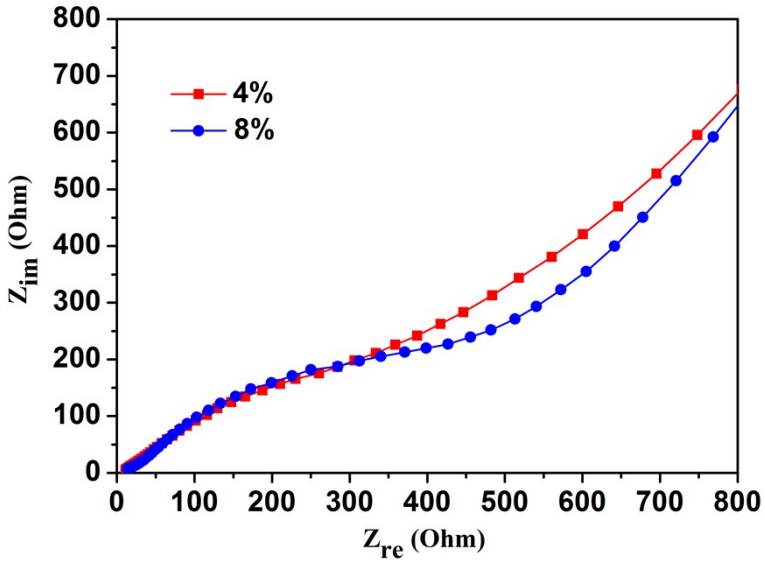


Figure S4 EIS spectra of 4% and 8% Mn-$Co_2(OH)_3Cl$ samples after 30 cycles at a current density of 500 mAg^{-1}.

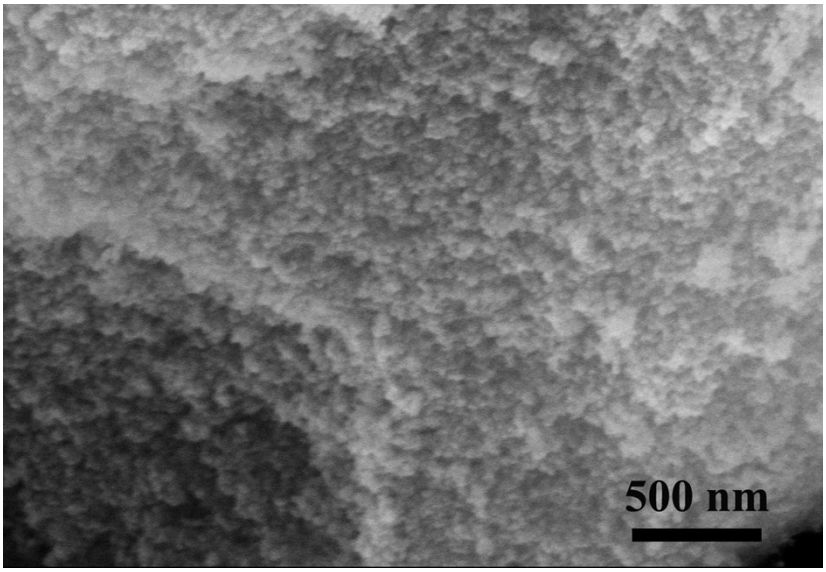


Figure S5 SEM image of Mn doped $Co_2(OH)_3Cl$ xerogels.