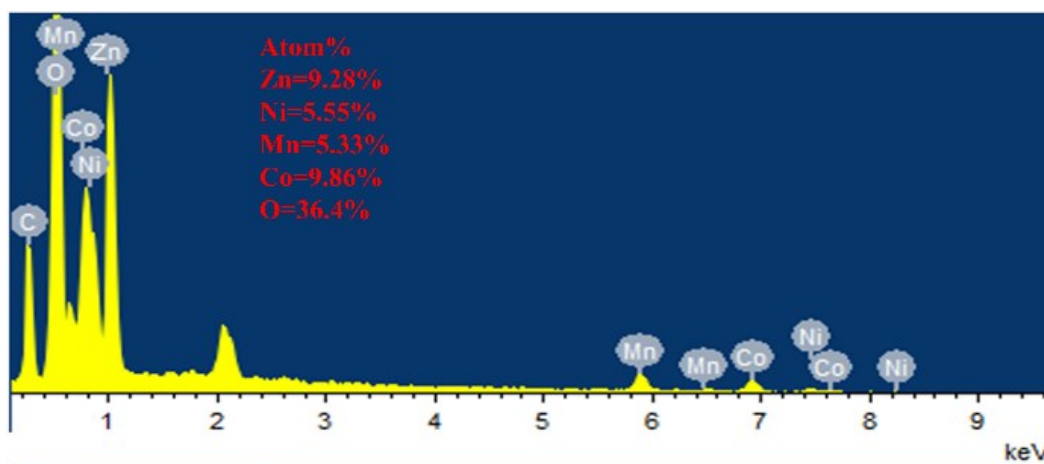
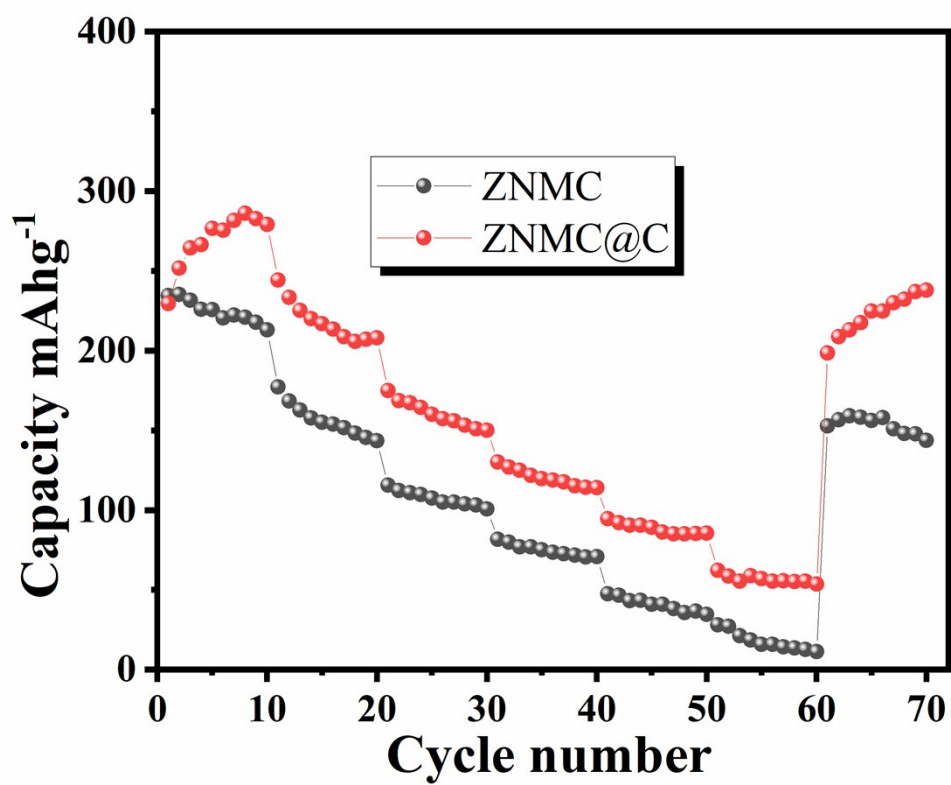


S1. XRD pattern of ZCO; ZNMC; ZNMC@C and Zinc cobaltate standard XRD

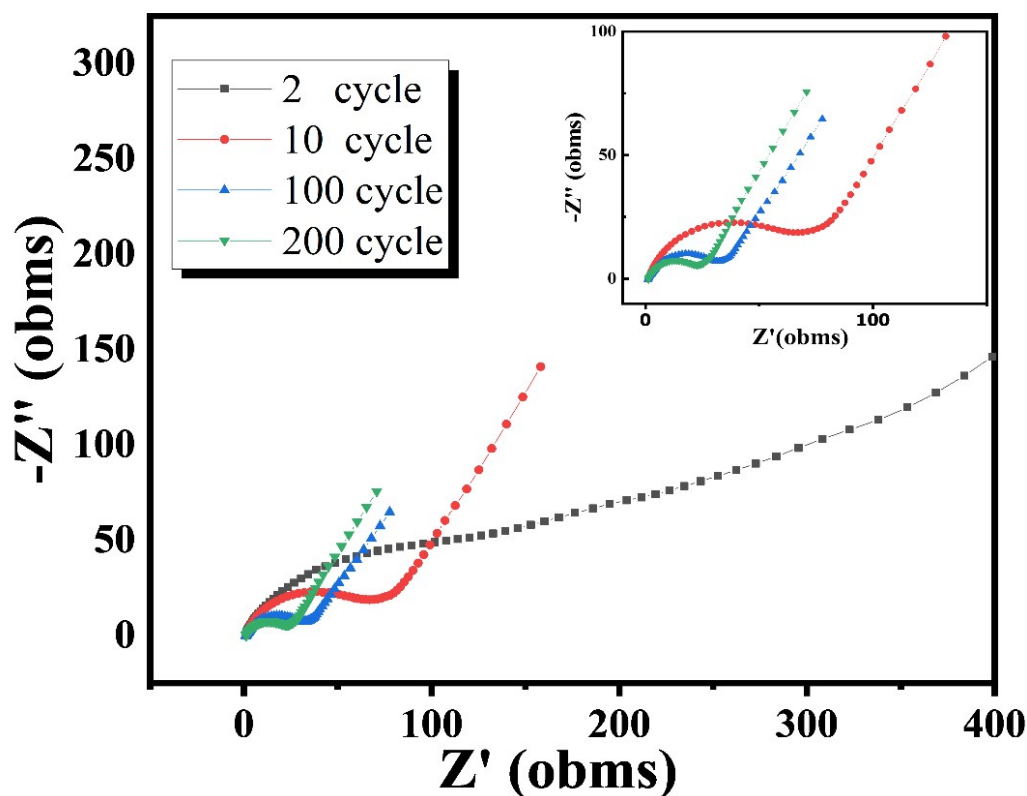
S2. SEM of ZNMC



S3 Energy spectrum of ZNMC@C



S4 ZNMC and ZNMC@C rate performance curve



S5 Electrochemical impedance spectroscopy of ZNMC after 0,2, 10, 100, and 200 cycles of zinc ion battery (the inset is the partial enlarged diagram).

	Elt.	Valence state	Main peak position [eV]	Area	Sate. position [eV]	Area
Charge	Co	4+	779.7	871.2	789.2	41.7
			794.8	388.4	804.2	58.7
	Ni	3+	855.2	229.8	859.8	78.3
			860.5	101.3	877.8	33.3
	Ni	4+	855.0	175.1	861.2	138.4
			872.3	62.5	877.1	32.8
Mn	4+	643.4	191.4			
			654.7	127.5		
Discharge	Co	3+	779.5	220.1	785.1	28.8
			795.0	81.8	804.4	25.2
	Co	4+	781.1	114.3	785.4	20.2
			796.2	41.1	805.2	15.2
	Ni	2+	854.1	246.8	861.0	182.8
			872.3	85.9	878.9	49.0
	Mn	4+	642.5	374.2		
			654.4	175.8		

S4. Fitting parameters for Co 2p, Mn 2p and Ni 2p peaks

Cycle number	ZNMC Rs ( $\Omega$ )	ZNMC Rct ( $\Omega$ )	ZNMC@C Rs ( $\Omega$ )	ZNMC@C Rct ( $\Omega$ )
0	2.32	1101	2.273	96.32
2	1.4	827	2.048	74.15
10	1.21	147	1.989	37.02
100	1.19	52.1	1.86	25.21
200	1.136	32.4	1.625	20.46

S5 Rs ( $\Omega$ ) and Rct ( $\Omega$ ) values on electrochemical impedance spectroscopy of ZNMC and ZNMC@C.