Supporting information

Influence of cobalt content on the electrochemical properties of sheet-like $0.5Li_2MnO_3 \cdot 0.5LiNi_{1/3+x}Co_{1/3-2x}Mn_{1/3+x}O_2$ as lithium ion battery cathodes

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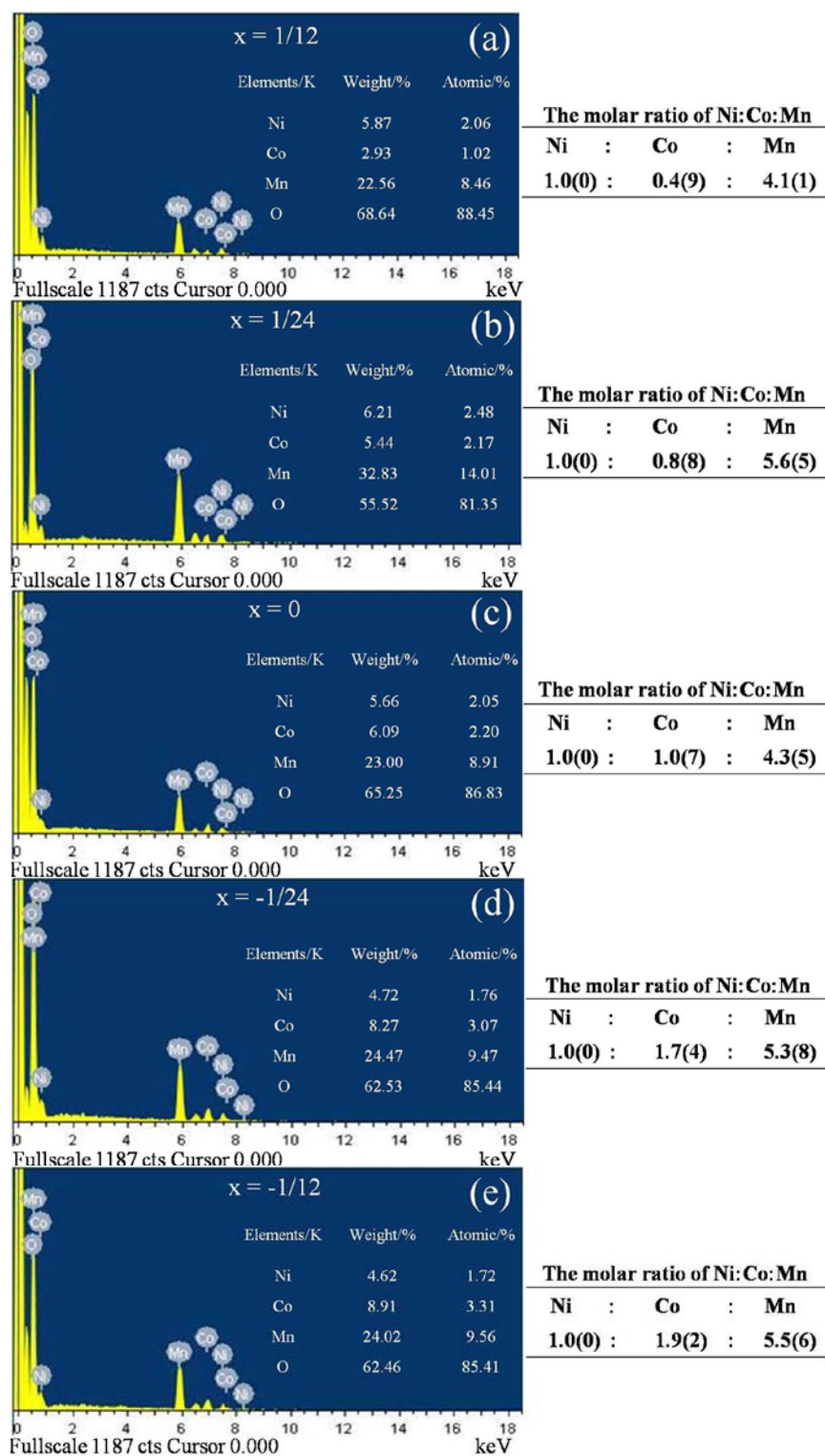Tel.: +86-531-88361387; fax: +86-531-88364464; e-mail: qshen@sdu.edu.cn.

x = 1/12 (a)

Elements/K	Weight/%	Atomic/%
Ni	5.87	2.06
Co	2.93	1.02
Mn	22.56	8.46
O	68.64	88.45

The molar ratio of Ni:Co:Mn

Ni	:	Co	:	Mn
1.0(0) :		0.4(9) :		4.1(1)

Fullscale 1187 cts Cursor 0.000   keV

x = 1/24 (b)

Elements/K	Weight/%	Atomic/%
Ni	6.21	2.48
Co	5.44	2.17
Mn	32.83	14.01
O	55.52	81.35

The molar ratio of Ni:Co:Mn

Ni	:	Co	:	Mn
1.0(0) :		0.8(8) :		5.6(5)

Fullscale 1187 cts Cursor 0.000   keV

x = 0 (c)

Elements/K	Weight/%	Atomic/%
Ni	5.66	2.05
Co	6.09	2.20
Mn	23.00	8.91
O	65.25	86.83

The molar ratio of Ni:Co:Mn

Ni	:	Co	:	Mn
1.0(0) :		1.0(7) :		4.3(5)

Fullscale 1187 cts Cursor 0.000   keV

x = -1/24 (d)

Elements/K	Weight/%	Atomic/%
Ni	4.72	1.76
Co	8.27	3.07
Mn	24.47	9.47
O	62.53	85.44

The molar ratio of Ni:Co:Mn

Ni	:	Co	:	Mn
1.0(0) :		1.7(4) :		5.3(8)

Fullscale 1187 cts Cursor 0.000   keV

x = -1/12 (e)

Elements/K	Weight/%	Atomic/%
Ni	4.62	1.72
Co	8.91	3.31
Mn	24.02	9.56
O	62.46	85.41

The molar ratio of Ni:Co:Mn

Ni	:	Co	:	Mn
1.0(0) :		1.9(2) :		5.5(6)

Fullscale 1187 cts Cursor 0.000   keV

Fig. S1. EDX analysis of powdered $0.5Li_2MnO_3 \cdot 0.5LiNi_{1/3+x}Co_{1/3-2x}Mn_{1/3+x}O_2$ samples obtained at the x value of (a)1/12, (b)1/24, (c) 0, (d) -1/24 and (e) -1/12.

Tab. S1. XRD data analysis of crystalline $0.5Li_2MnO_3 \cdot 0.5LiNi_{1/3+x}Co_{1/3-2x}Mn_{1/3+x}O_2$.

	$I_{(003)}$	$I_{(110)}$	$I_{(110)}/I_{(003)}$	$2\theta_{(110)}$
$x = 1/12$	2743	404	0.15	65.4
$x = 1/24$	3461	635	0.18	65.5
$x = 0$	3089	678	0.22	65.5
$x = -1/24$	2813	739	0.26	65.5
$x = -1/12$	3185	774	0.25	65.6

Note: $I_{(hkl)}$ represents XRD peak intensity (i.e., peak area) with a subscript index of corresponding crystal plane; 2θ denotes peak position.