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(74)

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(54)

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Ti , 1 , Al, Mg, Ga, Ti , Li₂O ,
[Li_x M_y O_z]
(, x = 0 2, y = 0.1 2, z = 0.1 4.5, M Co, Mn Ni
, Lipon Li₂O N
가 , -

1

[]
 []
 가가
 LiCoO₂ LiMn₂O₄ / /
 (rechargeability) (cycling)
 LipoN(Li_{2.9}PO_{3.3}N_{0.46}) 5 V (graphite) Li
 (2(± 1)× 10⁻⁶ S/cm)가

I, Mg, Ga, Ti ; 1 ; Al, Mg, Ga, Ti ; A
 ; ; N ; Li₂O
 [Li_xM_yO_z]
 (, x = 0 2, y = 0.1 2, z = 0.1 4.5, M Co, Mn Ni
)
 (rechargeability)

Ti 1 Al, Mg, Ga, Ti Al, Mg, Ga,

[$Li_x M_y O_z$], $x = 0.2, y = 0.1, z = 0.1$ 4.5, M Co, Mn Ni

($Li_x M_y O_z$) 50%, 100, 1000, 5%, 10%

50%, 1000, 2000, 5%, 0%

$Al_2O_3, MgO, Ga_2O_3, TiO_2$ Li_xM_yO

(Al, Mg, Ga, Ti) Li_xM_{y-t}N_tO_{z+u} (t = 0, 0.5, u = 0, 0.3) (sol

id solution) AmBn(A Al, Mg, Ga, Ti, B Co, Mn, Ni, m n 0-2) (intermetallic compound)

가, Co, Mn, Ni

가 (hexagonal phase) (monoclinic phase)

Li₂O (nano-composite)

Lipon(Li_{2.9}PO_{3.3}N_{0.46}) N (reactive sputtering)

N 6% 가 가 가

N 6% 가 가

2, 12, 1, 800, 1200 (target)

[$Li_x M_y O_z$], $x = 0.2, y = 0.1, z = 0.1$ 4.5, M Co, Mn Ni

($Li_x M_y O_z$)

Si Au Pt Ti Au Pt Si (wafer)(SiO₂/Si) Ti

Al, Mg, Ga Ti

Ar/O Al₂O₃, MgO, G

a₂O₃ TiO₂ 15, 50keV, 10¹⁶, 10¹⁸/cm²

가 50keV 가, 10¹⁸/cm²

10¹⁶/cm²

1000, 50%, 10%

50%, 1000, 5%, 0%

2000 Al₂O₃, MgO, Ga₂O₃, TiO₂

Li_xMn_yO_z (Al, Mg, Ga, Ti)

, 0.5, u = 0, 0.3) (solid solution) Li_xM_{y-t}N_tO_{z+u} (t = 0

(intermetallic compound)

가 Lipon N- , 가 10 % 가 N ,
 , Li₂O Li₂O

Li₂O , Sn, Ge, P
 b 100keV , 10¹⁷ 10¹⁸ /cm²
 , 700 2 (element) 1

(1)
 LiCoO₂ , Si 900 7 , 가 2 inch, 7 mm
 (reactive sputtering) , LiCoO₂ Al₂O₃ LiCoO₂ Al Ar/O , Al₂O₃
 600

(1)
 Al 1 LiCoO₂ 1 400 μA/cm² 3.0 V 4.2 V 200
 58 μAh , 1 75 μAh , 1

(4)
 1 LiCoO₂ 15 keV, 1 10¹⁷/cm² Al , 700
 , LiCoO₂ LiCo_{1-x}Al_xO₂ (x 가 (Gaussian distribution)

(3)
 Lipon N- , N
 가 10 %가

(2)
 Lipon 3 2 , 2
 2×10⁻⁶ S/cm , 3 10⁻⁵ S/cm 가

(4)
 3 N- Lipon Li₂O S
 Sn/Li₂O 700 Sn/Li₂O

, Lipon N
 가 Li₂O -

(57)

1.
 () 1 ; Al, Mg, Ga, Ti
 Al, Mg, Ga, Ti 50 % , 1000 5 %
 Li₂O ;

[1]
 Li_xM_yO_z , x = 0 2, y = 0.1 2, z = 0.1 4.5, M Co, Mn Ni
 (1)

1	2.		100	1000	-
1	3.				-
1	4.		Li ₂ O		-
1			Sn, Ge Pb		Li ₂ O
1	5.		Al, Mg, Ga, Ti		2000

