

(19)
(12)

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(B1)

(51) 。 Int. Cl. ⁷
H01M 10/40

(45)
(11)
(24)

2003 01 30
10 - 0370383
2003 01 16

(21)
(22)

10 - 2000 - 0071315
2000 11 28

(65)
(43)

2002 - 0041644
2002 06 03

(73)

2 290

(72)

APT109 1006

APT109 1208

4 3010 - 244 1

2 140 - 3

2 APT107 1412

APT1906 1903

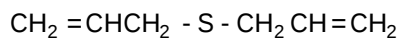
(74)

:

(54)

yl sulfide) 0.1 10.0 가 , 100 0.8 (1) 2.0M , (all

1

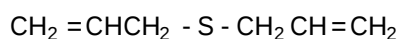


, , ,

, 0.8 2.0M
(1) (all

yl sulfide) 0.1 10.0 가

[1]

, , 2 (interca
lation) 가 , , , 18650 , 06

3048

3.6 3.7V

가

Ni - MH

Ni - Cd

0

4.2

V

(dimethylcarbonate, "DMC"), (ethylene carbonate, "EC"),
(diethylcarbonate, "DEC")LiPF₆, LiBF₄, LiClO₄

가

,

(比水)

Ni - MH

Ni - Cd

(水系)

가

가

가

,

가

,

가 가 가 (: Makoto Ue, Solution Chemistry of Organic Electrolyte
s, Progress in Battery Materials (1997) Vol.16).

(

:

5639575 ,

5525443).

,

,

- 20

가

(1C)

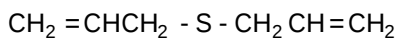
(,)
 가 Li_2CO_3 , Li_2O , LiOH
 (passivation layer) , SEI(solid electrolyte interface)
 SEI

SEI (solvation) ,
 EC, DMC DEC (cointercalation)
 SEI SEI 가 가 가
 가
 (: J. Power Sources (1994) 51:79~104).

SEI 가
 (: Shoichiro Mori, Chemical properties of various organic electrolytes for lithium rechargeable batteries, J.Power Source (1997) Vol. 68).
 가
 SEI

SEI 가
 (intercalation)
 0.8 2.0M
 100 (1) (allyl sulfide) 0.1 10.0 가

[1]



1

가

$$\begin{array}{ccccc} \text{LiPF}_6, & \text{LiClO}_4, & \text{LiAsF}_6 & \text{LiBF}_4 & \\ & \text{LiPF}_6 & & & . \end{array}$$

(1)

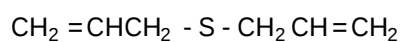
0.1

10.0

1.0

5.0

가

$$[\quad 1]$$


- (cyclic voltammetry, "CV")

1

[1]

(1M LiPF ₆)	가	(V)
/ = 1:1	-	0.5
/ = 1:1	2.0	0.74

[CV]

* (working electrode): MCF

* (reference electrode):

* (counter electrode):

* : 0 3V

* (scan rate): 0.1 mV/s

가¹

SEI

(intercalation)

가

가

SEI

PLI (polymer lithium ion)

1

LiPF_6 가 1.0M : = 1:1 (, ") 100
 1.0 가 ,
 063048 , LiCoO_2 ,
 (, "PVDF"), 92:4:4 , N - - 2 - (N - meth
 yl - 2 - pyrrolydone) 20 μm PVDF
 92:8 , N - - 2 -
 15 μm ,
 25 μm PE (seperator) , 30mm × 48mm × 6mm ,
 063048 .
 2
 2.0 가 1
 , 063048 .
 3
 5.0 가 1
 , 063048 .
 1
 가 1 063048

1 3 1 063048 160mA, 4.2V
 - , 1 160mA 2.5V 1
 . 3 , 800mA 2 30 4.2V
 - 20 16 , 160mA 2.75V 2
 .

[2]

	(%)
1	74.4
2	77.5
3	72.1
1	69.5

5 , 800mA 160mA, 4.2V - , - 20
 3 .

[3]

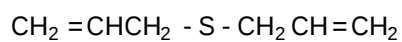
	(V)	(%)
1	3.59	25.3
2	3.68	31.5
3	3.29	10.2
1	3.11	2.0

2 3 , (- 20) (0.2C) ,
(1C) 30% .

(57)

1.

0.8	2.0M					100
(1)		(allyl sulfide)	0.1	10.0	가	

$$[\quad 1]$$


2.

3.

4.

1, LiPF₆, LiClO₄, LiAsF₆ LiBF₄ 1