

(19)
(12)

(KR)
(B1)

(51) 。 Int. Cl. 7
H01M 4/36

(45)
(11)
(24)

2002 08 10
10 - 0347882
2002 07 25

(21) 10 - 2000 - 0039621
(22) 2000 07 11

(65) 2002 - 0006134
(43) 2002 01 19

(73) 1

(72) 247 - 183

180 - 16 B01

@ 3 - 507

2 7 - 2 403

:

(54) / ,

(A) - 4 4 0.5 1.5M 가 ; (B)
(A) 가 가 30 2 가 ; (C) (B)
80 24
/

; ; ; ;

1 1 - 6

2

3 1, 6 - 7, 1 - 2

4 7 1

가 (MnO₂ LiMn₂O₄) 1990 가 (LiCoO₂) (LiNiO₂) 3.
 6 V 가 (LiMn₂O₄) 가
 가 10⁻⁴ S/cm 가 10⁻³ S/cm
 6.5% 가 (cubic) (tetragonal) 가
 가 가

(Polypyrrole) 가 (Polyacetylene), (Polyaniline)
 (Seiko) (Varta)/ (BASF) (Polyaniline) (B
 1980 (Poly
 / , /

25% 가 / 가 (Polythiophene)
50%

9073920 (J.Chem. Soc.,Chem.Comm. 198, (19
/MnO₂ .(Chem.L
/LiMn₂O₄ 91)) ,
ett.,1067, (1989)).

가
ClO₄⁻ / 가
/ 가
(brittleness)

가 ; (A) - 4 4 0.5 1.5 M 가 30 2
; (B) (A) 가 80
; (C) (B)
24

(A) Li_xCo_{1-x}Mn₂O₄, LiCoO₂, Mn₂O₄, LiMn₂O₄ (B)
가 1 : 1 1 : 3

(A) (camphorsulfonic acid), (alkylbenzenesulfonic acid), (n)
(alkylbenzenesulfonic acid, sodium salt) 가 0.5 M 1.5 M
0 12 가

가
(ethylene carbonate), (dimethyl carbonate)
(lithium hexafluorophosphate)가 가

(polyvinylidene fluoride) 가 (polytetrafluoro - ethylene) 가
 가 , 3 5 %

(ammonium persulfate(APS), Acros), (ferric perchlorate) ,
 (ferric chloride), (ferric nitrate), (ammonium ferric sulfate)
 (potassium persulfate) 1 :1 1:7.5
 가 , (LiMn₂O₄) 가 .

< 1

(dodecylbenzenesulfonic acid(DBSA), Acros) 23.1g 350ml
 LiMn₂O₄ (KMG co.) 10g 가 10
 - 4 4 (Acros) 10g 가 380 rpm 30 2
 가 80
 /
 4 - 2 , X
 1

(ethylene carbonate)/ (dimethyl carbonate)/LiPF₆ (Me
 rck Battery Grade, EC/DMC = 1/1, 1 M LiPF₆) /
 3.0 4.2 V C/3 4.2 V C/3
 (Chemettal Co.) /LiMn₂O₄
 (PVdF, Altochem Kynar 761) , /
 (sfg6/acetylene black, Lonza Co.) () 7/3
 /LiMn₂O₄ (2 × 2cm²) / / n - - (n - methyl - pyrrolidinone)
 / /
 = 100/6/10 0.05 g/cm²
 3

< 2

1 [nonylbenzenesulfonic acid(OBSA), Aldrich] 19.2g 350ml
 1 X

< 3

[butylbenzenesulfonic acid(BBSA)] 15.2 g 350ml 1
 X

<	4								
	1	-	[p - toluenesulfonic acid(TSA), Aldrich] 12.2 g			350ml			
				1		X			
<	5								
			[bezenesufonic acid(BSA), TCI] 11.2 g			350ml			1
				1		X			
1	25	1 - 5	가						
		27°					1		
		= 3.34°				(d - spacing)		26.4	
<	6								
			(LiMn ₂ O ₄) 20g	1					2, 3
					1				
<	7								
			(LiMn ₂ O ₄) 30g	1					2, 3
	4				1				
	2	1, 6 - 7							
			LiMn ₂ O ₄						2
<	1								
			LiMn ₂ O ₄		/LiMn ₂ O ₄				
			1		3	4			
<	2								
			LiCoO ₂ (Seimi Co.)		/LiCoO ₂				
			1		3				
3		1, 6 - 7,					7	4	%
		LiMn ₂ O ₄	1 - 2					7	1
					7				

가 가 ,
 가 가 .
 가 , IC
 가 .

(57)

1.

(A) -4 4 0.5 1.5 M 가 ; (B)
 (A) 가 30 2 가 ; (C) (B)
 80 24 /

2.

1 ,
 (A) $\text{Li}_x\text{Co}_{1-x}\text{Mn}_2\text{O}_4$, LiCoO_2 , Mn_2O_4 , LiMn_2O_4 / 1

3.

1 ,
 (B) , / 1 .

4.

1 ,
 (A) , , / 1

5.

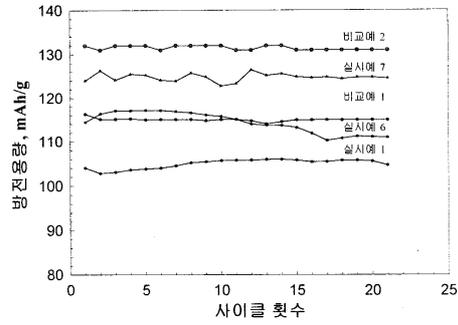
1 /

6.

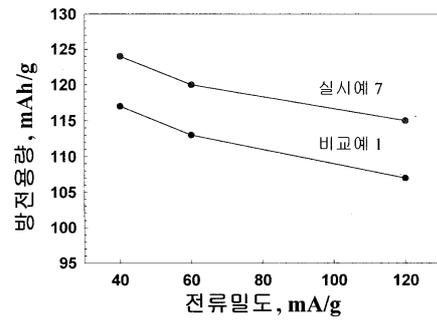
5

/

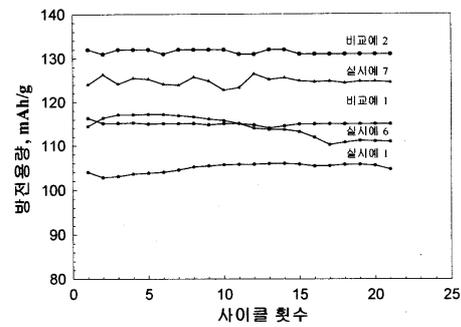
1



2



3



4

