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2004 09 17(21) 10-1997-0007812
(22) 1997 03 08(65)
(43)10-1997-0066637
1997 10 13

(30) 96-080811 1996 03 08 (JP)

(73) 가 가 가 가 6 7 35

(72) , 가 가 6 7-35 가 가
가 , 가 가 6 7-35 가 가

(74)

:

(54)

(1) , 가 (2, 3), 가 ,
/ 가 .

1

1 C-V .
2 C-V .
3 가 .
4 가 .
5 가 .
6 가 .

7
8 7
9 ITO
10 9

< >

1 : RED ()
2, 2a, 2b, 2c, 2d, 2e, 3, 3a, 3b, 3c, 3d, 3e : ITO
4, 5 : ()
6, 6A, 6B :
7 :
8A, 8B, 8C, 8D, 8E, 8F :
10 :

700 nm) , 가 X-Y 가 (400
 , (EC) (,
() ECD) ,
 , 59-24879 ECD 가
EC 가 ND , ECD
가 가 , ECD
 , EC ECD
(response speed) ECD / ()
 , / 가 ,
 , (ITO) , / 가
 , ; 가
(400 700 nm 가) ,
) , 가
 , , 가 , 가
가 , ,
 / 가 ,
가 ,
가 ,

(銀膜)

(Cu 가)

ITO 10 40 ITO

0.1 100 mmol/ 가

(plating bath)

RED (Reversible Electro Deposition)

RED

RED ()

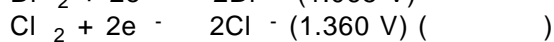
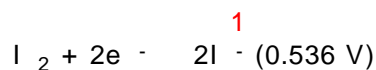
(DMSO)

, 가

가

1

가



)가

가
가(가
가

가 RED 가 (: 400 nm 700 nm)

가

/

, 가

, 가 가

, 가

, 가

, 가
)2
가

-1,2-

-N,N,N',N'-

, 2-

1

, 1-

-2-

, -1,2-

, , ,
 , (/)
 , () 가 /
 , 0.03 2.0 mol/ , 0.05 2.0 mol/
 , RED , 1 () 1 가 가
 , 1- -2- , ,
 , , (DMAB), (TMAB), , D-
 -1,5- RED
 1 가 가 RED RED
 RED DMSO (DMSO) 18
 RED ,
 , 가
 , 가 가
 , DMAB TMAB 가 TMAB
 가 , DMAB TMAB
 , 1/150 1
 (DMAA), N- (DMF), (DEF), N,N-
 (AN), 2- (MEOH), 2- (MPA), N- (MP), (PC),
 (EEOH) 1
 DMSO , DMF, DEF, MEOH, EEOH DMSO
 70 RED
 가 , RED 1/2 5
 가 RED 가
 , 4
 1/2 5 가
 , / (, ITO)
 , 가
 / ITO , ITO
 , ITO ITO
 , 0.010 0.10 % , 0.010 HCl 1 (SnCl₂) 0.10 1.0 g
 0.10 1.0 g , 0.10 % HCl 1 (PdCl₂)
 , 가 ITO
 , 가 가 ITO
 , 가 가 RED
 , 가

/ (/) , , . , , X-Y 가
가 (400 700 nm)
(
, 0.03 2.0 mol/
가 가 , 가 , , ,
가
, (10) 7 8
(4, 5); (10) ITO (2, 3) (
)
, (4, 5) (全周) (counter electrode) (6)
, (silver wire)
, RED (1) (2, 3), RED RE
D , (2, 3)
가
3 - , ,

Ag + + e - Ag
, (가 , 가)
가
9 10 (10) , (2, 3)
(4 5) ITO (2a 3a)
가 (2b 2e 3b 3e) (2e
3e)
(2a 3a, 2b 3b, 2c 3c, 2d 3d, 2e 3e), (6A 6B) (細線)
(9A 9F) (8A 8F)
가, (4 5) (7) (8 , (6))
RED (1) 가
RED (1) , - (,) 가
(V1 V5) (2a 3a, 2b 3b, 2c 3c, 2d 3d, 2e 3e) 가
(V6) (6A 6B) 가
, V1=V2=V3=V4=V5 , 가
, (, V1<V2<V3<V4<V5),
(,). CCD (
) (optical diaphragm) , CCD
가
가

1 .

[1]
()

	()
DMF	-60.4
DEF	-78.0
DMAA	-20.0
MPA	-30.9
N - MP	-24.4
MEOH	-85.1
EEOH	-60.4
PC	-49.0
AN	-45.7
DMSO	18.0

, . 2 .

[2]
(-40 24)

DMF	
DEF	
DMAA	
MPA	
N - MP	
MEOH	
EEOH	
PC	
AN	
DMSO	
AGBr: 500 mM, TBAB: 1000 mM, SC(NH ₂) ₂ : 1 g, CuBr ₂ : 2.2 mM	

, DMSO -40 가 .

< 4>

7 8

(DMSO)가 4 500 mmol/ -n- (TBAB)가 750 mmol/ (CuBr₂) 0.1 mmol/ 가 , 가 , 3 HP8452A가 , 400 nm 80 % 가 , 2' 80 24 1'

	1	2
-1,2-		
N,N,N',N'-(2-) -		
-N,N,N',N'-		
1- -2-		

AgBr: 500 mM, TBAB: 750 mM, CuBr₂: 0.1 mM

The diagram illustrates a network structure with nodes and connections. Nodes are labeled with numbers (3, 9), text (RED, ITO, EC, CCD, 가), and symbols (comma, apostrophe, period). Connections are represented by lines of varying thickness and style (solid, dashed, dotted).

Key nodes and their connections include:

- Node 3** (top left) connected to **Node 1'** (top center) and **Node 2'** (top right).
- Node 9** (middle left) connected to **Node RED** (middle center) and **Node ITO** (middle right).
- Node RED** (middle center) connected to **Node EC** (bottom center) and **Node CCD** (bottom right).
- Node 가** (bottom left) connected to **Node RED** (middle center) and **Node EC** (bottom center).
- Node 가** (bottom center) connected to **Node EC** (bottom center) and **Node CCD** (bottom right).
- Node 가** (bottom right) connected to **Node CCD** (bottom right) and **Node 가** (bottom center).

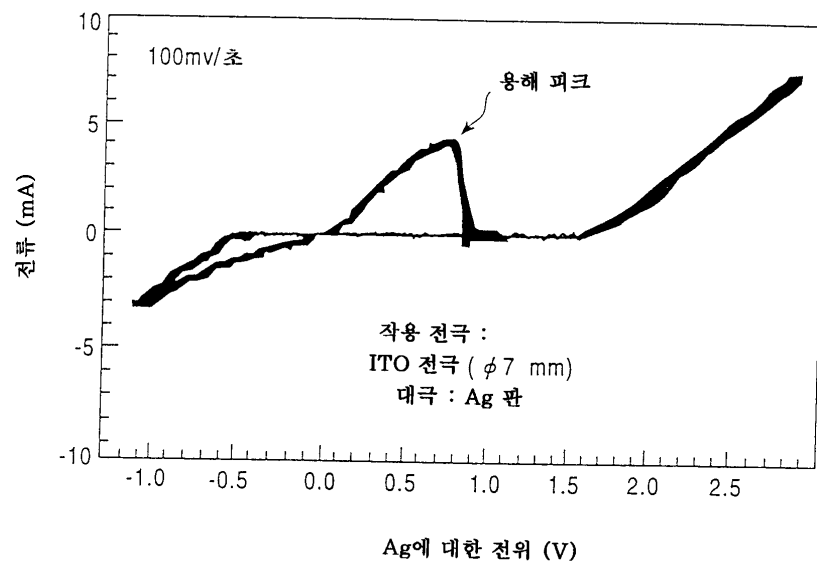
The diagram uses a variety of line styles to represent different types of connections, including solid lines, dashed lines, and dotted lines. Some nodes are highlighted with a red background, while others are white. The overall layout is complex and non-linear, suggesting a hierarchical or interconnected network structure.

1.

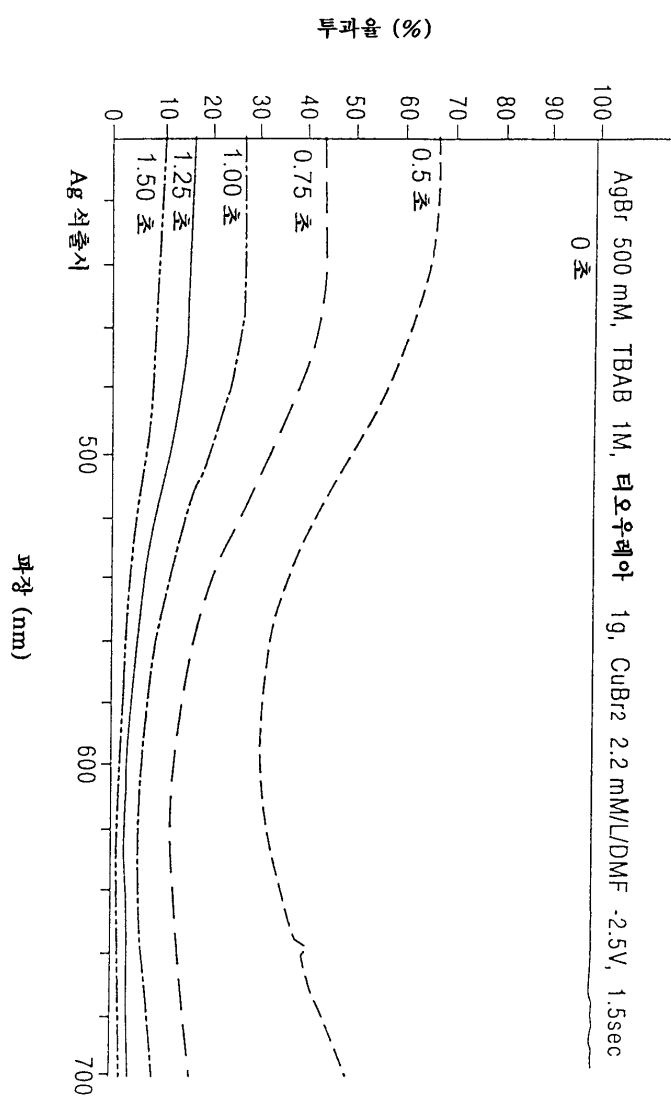
-, N,N-2-, N-1,

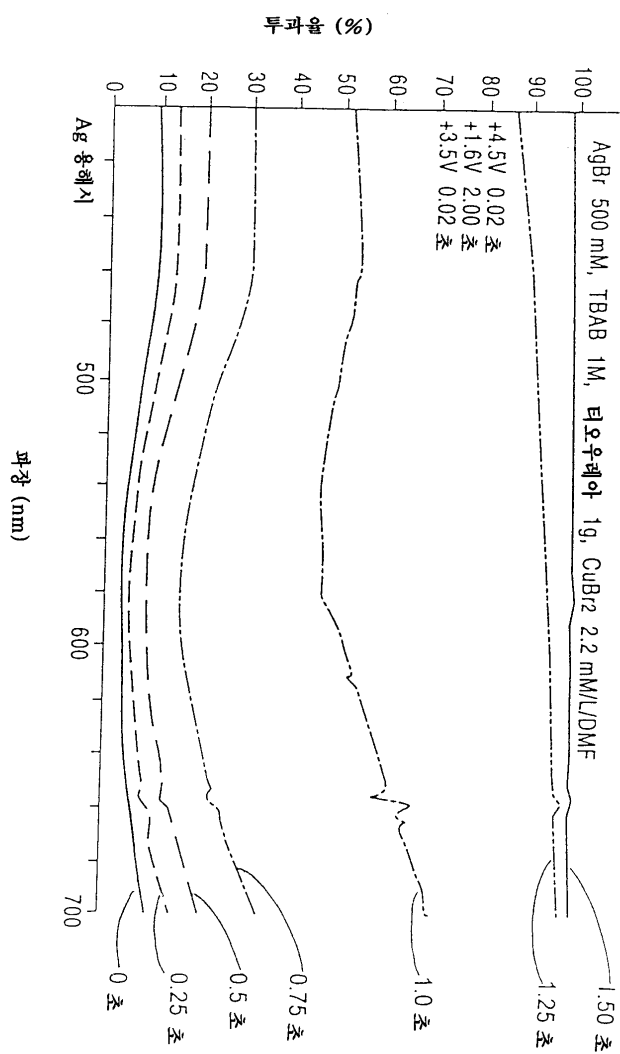
- 가 ; ;
- 0.03 2.0 mol/ ; ;
0.1 100 mmol/ ; ; -1,2-
- , N,N,N',N'-(2-) -N,N,N',N'-
, 2- , 1- -2- , ,
- 2.
- 1 , , 1 가
- 3.
- 2 , 가 , ,
- 4.
- 2 , 가 , , ,
- 5.
- 2 , 가 , , , , ,
- 6.
- 1 5 ,
- 가
- 7.
- 6 , 1/2 5 .
- 8.
- 1 5 , -
- 9.
- 8 , .
- 10.
- 가
- ; 가 ; ;
, N- 가 , , N,N- , N-
, 2- , 2- ;
- 0.03 2.0 mol/ ; ;
0.1 100 mmol/ ; ; -1,2-
- , N,N,N',N'-(2-) -N,N,N',N'-
, 2- , 1- -2- , ,
- 11.
- 10 , , 1 가
- 12.
- 11 , 가 , , ,
- 13.
- 11 , 가 , , ,

2

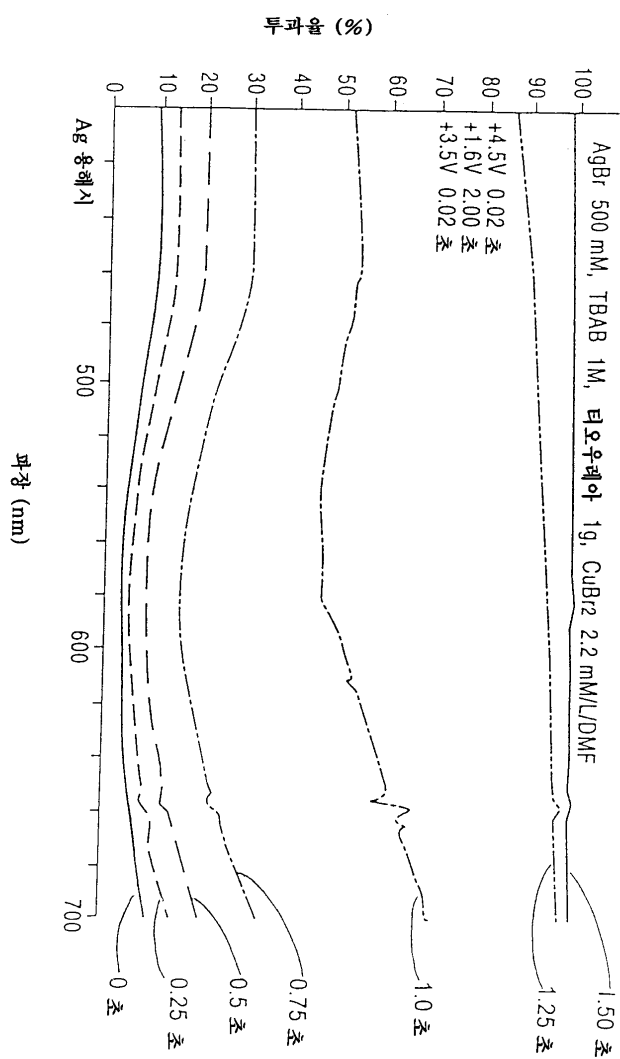


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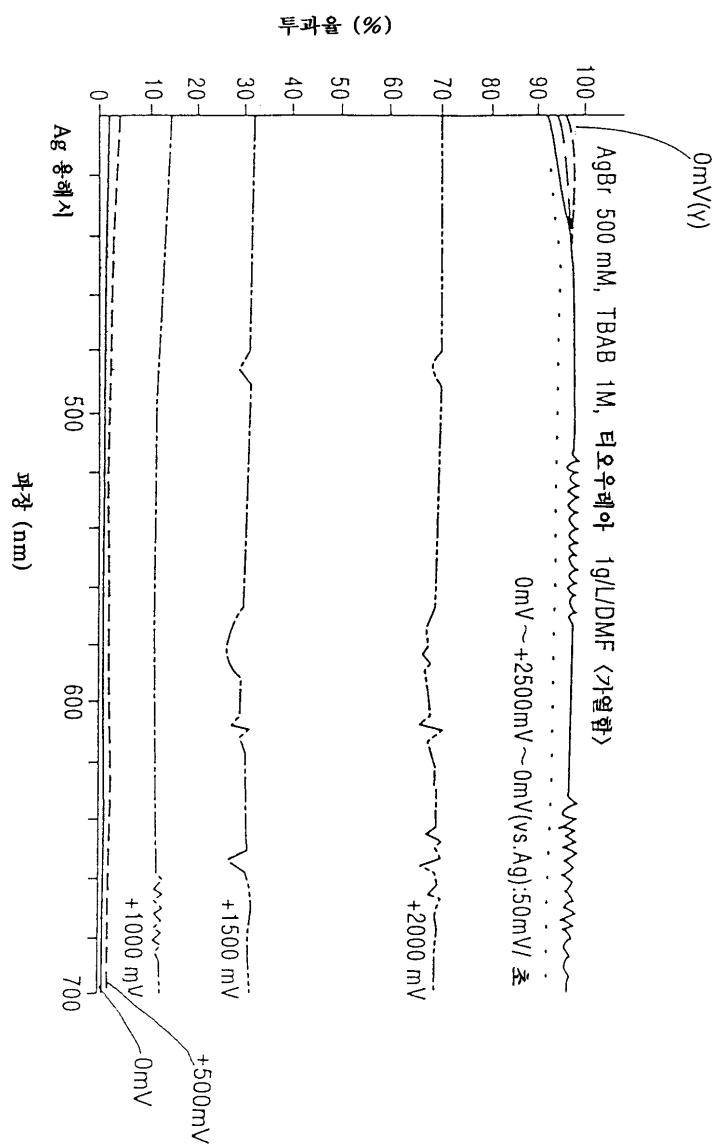




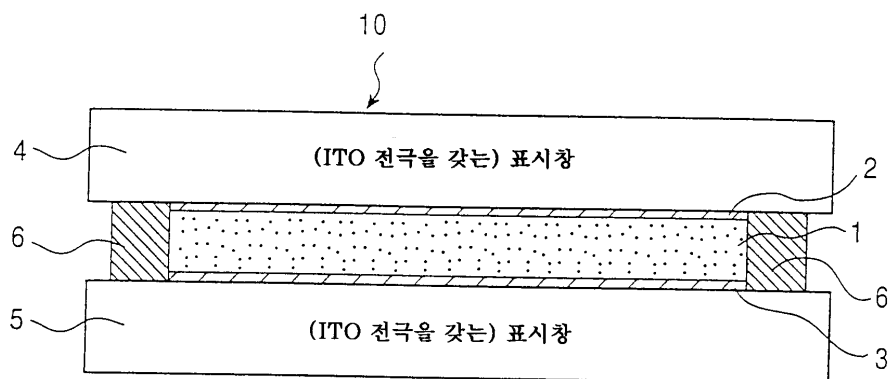
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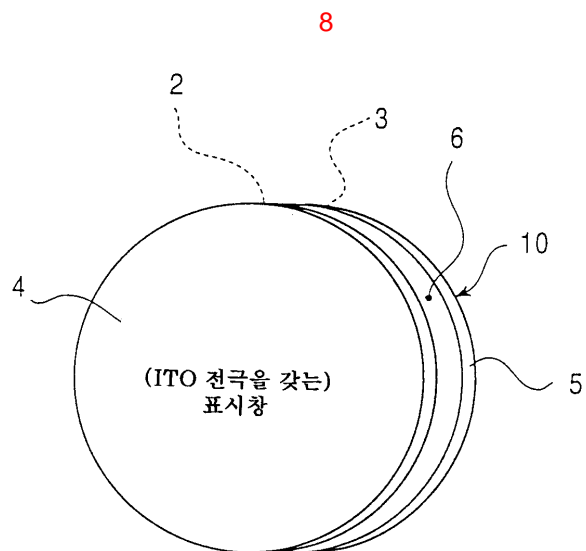


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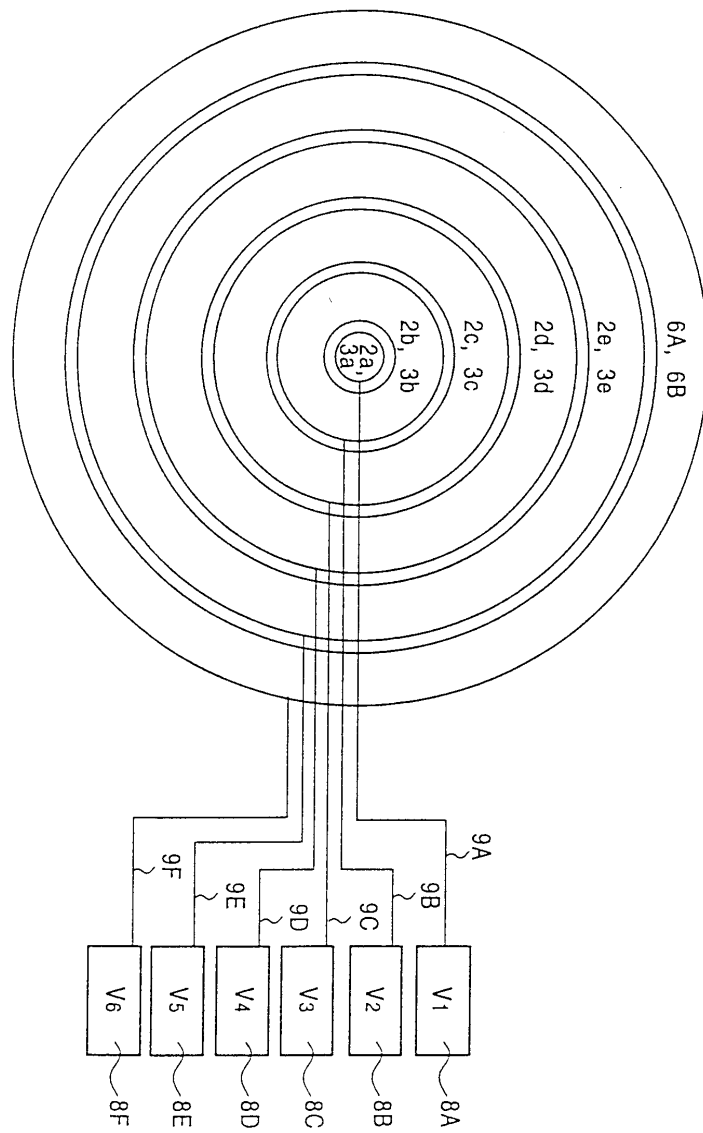


7





6



10

