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2003 03 06(21) 10 - 2002 - 0009870
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(71) 가 가
가 4 6

(72) 1 5 - 1 가 가

1 5 - 1 가 가

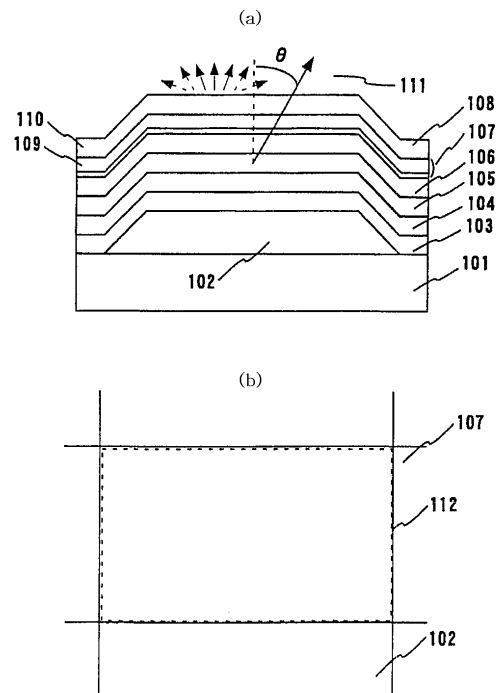
1 5 - 1 가 가

(74)

:

(54)

1 , 2 ,
d가 $d \leq \lambda / 4$ (λ :) .



1	(a)	1	,	1	(b)	.
2	(a)	2	,	2	(b)	.
3		3	.			
4		3	.			
5	(a)	4	,	5	(b)	5 (a) A - A'
6	(a)	5	,	6	(b)	6 (a) B - B'

101 :

102, 110 :

103 :

104 :

105 :

106 :

107 : 2

108 :

111 :

112 :

가 , (man - machine interface)

가 , , ,

(Organic Electro Luminescence) 가

EL , ITO 1 , , 2 , (V) 가 , 가 , (exciton)가 가 1

1 , 1.6, 2.0, 1.5 , 1

가 , , 20%

EL , 가

가

EL 가 , 가 EL 가 , 가

, 가 ,

EL , 2 4 가 , 가

EL , 1

EL

USP 5, 703, 436 , 2 , 1 Mg, Ag , 2 ITO(Indium Tin Oxide) EL 가

6 - 163158 , EL 가

$$d \leq 4 \quad (\lambda : 1)$$

EL

2, He, Ne, Ar

1 가

EL

H₂O, O₂가

2

1

가

1

2

EL

2

d가

1

EL

2

EL

2

d가

1

EL

가 50μm

(rib)

가

EL

가

EL

EL

2

2

1

1

1

2

2

2

(極薄膜)

1

1

1

2

2

2

가

[illegible]

(BMA - 3T), (tBu - PTC), (8 -) , 가
 , 2 .

6, , DCM, 가 .
 2 .

가 (8 -) , 2 .

2 .

가 .

가 ,

2 , In₂O₃ - ZnO , In₂O₃ - SnO₂ , EB .

가 , 2 , H₂O, O₂가 2 , SiO₂, SiNx, Al₂O₃ ,

가 , d , 1

d가 1/4 ,

가

1

1 (a)

1 (b)

(101) , 150nm ITO ,
 1 (102) $2 \times 2\text{mm}^2$.

1 (102) (101) , (純水) , 3
 , 가 , 80 5 .

OW, , O₂ 3 . O₂ , 3Pa, O₂ 22ml/ , RF 2

, 1 (102) , 20nm (, CuPc
) . Mo (boat) 20mg , 0.15 ± 0.05nm/sec
 . CuPc (103) 50nm 4, 4 -
 [N - (1 -) - N -] (, α - NPD) .

Mo 60mg , 0.15 ± 0.05nm/sec . α - NPD
 (104) , 2 20nm (8 -)
 (, Alq) (, Qc) .

2 Mo Alq, Qc 40mg, 10mg , 0.40 ± 0.05nm/sec, 0.0
 1 ± 0.005nm/sec . Alq+Qc (105) ,
 20nm Alq .

Mo 40mg , 0.15 ± 0.05nm/sec . Alq
 (106) .

, 2 (107) , (109) Mg Ag . 2
 0.14 ± 0.05nm/sec, 0.01 ± 0.005nm/sec , 10nm
 .

, 50nm In - Zn - O . (110)
 . In/(In+Zn)=0.83 . Ar:O₂ 가
 , 0.2Pa, 2W/cm² . Mg:Ag/In - ZnO 2 (107)
 , 65% .

, CVD 35nm SiNx . SiNx (108) .

, 525nm . (105)
 , n=1 (108)
 d , , 1 .

2

115nm(=20+10+50+35) ≤ d ≤ 135nm

(=20+20+10+50+35) < 137.5nm (=λ/4)

, (110) 150nm .
 . n=1
 (111) d , 1 .

3

$$137.5\text{nm}(=\lambda/4)<215\text{nm}\leq d\leq 235\text{nm}$$

1 (102) , 2 (107) 5V 가 ,
 (112) . (θ) ,
 (108) . , θ = 0 ° , 가
 100cd/m² .
 , 가 , 가 ,
 , 가
 , 1.5 .

2

. 2 (a)

, 2 (b)

EL (204) . (101) 1 (102), (103),
 (104), (105), (106), 2 (107) .
 1 가 , (105), (106), 2 (107)
 20nm, 20nm, 60nm .

, EL (204) 가 , - 90

, . (203) . (203)
 , (202) .

(202) 200μm . (202) , 10μm 1 %
 . (203) EL (204) , 0.5kg /cm² UV
 , (112) UV , UV
 (202) .

UV 4000mJ/cm², 4 .

EL (204) (203) , (202)
 10μm . n=1 N2 가 가 가 . (201) .
 (105) (201) 2 (107) d
 , 가 1 .

4

$$80\text{nm}(=20+60)\leq d\leq 100\text{nm}(=20+20+60)<137.5\text{nm}(=\lambda/4)$$

, 1 가 , 2 (107) (201) ,
 가 , (201) .

(201) (203) 1 (111) ,
 1.5 .
 3
 , 가 가 . 3
 , 4 .
 (301) 1 (302, 302') ITO 1
 가 , 140nm, 100 μ m, 120 μ m .
 , (JSR 製: PC452) . 1000rpm/30
 , , 90 /2 .
 , ghi , ,
 JSR 製 (PD - 523) , /40 , /60
 , 365nm 300mJ/cm² , 220 /1
 .
 PC452 (311) 2 μ m , ITO 20 μ m .
 , 1 (302), (311) (301) 1
 가 .
 , 40nm α - NPD . Mo 50mg ,
 0.15 $\pm$ 0.05nm/sec .
 α - NPD (303) , , 20nm
 (, p - EtTAZ) .
 Mo (304) 20mg , 0.15 $\pm$ 0.05nm/sec . p - EtTAZ
 , 10nm Alq . Mo 10mg ,
 0.15 $\pm$ 0.05nm/sec . Alq (305) .
 , 2 10nm Alq , (, Nr) .
 2 Mo Alq, Nr 10mg, 5mg , 0.40 $\pm$ 0.05nm/sec, 0.01
 $\pm$ 0.005nm/sec . Alq+Nr (306) .
 , 10nm Alq . Mo 10mg ,
 0.15 $\pm$ 0.05nm/sec . Alq (307) .
 , 10nm (308), 30nm (309) , 2 (310)
 . 가 . , 2 (310)
 200 μ m, 100 μ m .
 EL (312) 2 가 - 90 .

(318) (317) UV
 20 μ m (318) (317)
 150nm Al (315)
 60 μ m, 300 μ m
 (318) (316, 316')
 (314) (315)
 20 μ m (319)
 10
 EL (312) (319) . CCD
 가 , 0.5kg /cm² (319)
 2 (323, 323') UV (314)
 가
 (319) 20 μ m (317) EL (312) (319)
 1 N2가 (313)
 EL (312) (323, 323') , (321, 321') . α - NPD P - EtTAZ
 , Alq , Alq+Nr
 2 (310) 가 α - NPD P - EtTAZ
 (λ = 440nm) (313) d
 1
 5

$$d \sim 100\text{nm} (= 20+10+10+20+10+30) < 110\text{nm} (= \lambda/4)$$

 (321, 321') 1 가 , 2 (310) (3
 13) 가 (313)
 (313) (319) (316, 316') (322,
 322') 1 (320)
 1.5
 (315) , 2 (310) 가 1/1000 가
 4

, 1

.

, 5 (a)

1

R(Red), G(Green), B(Blue)

, 1

(315)

, , R, G, B가 , 가 .

, G

1/2

, G

2

, 10%

, 1/2

, G - OLED ,

R - OLED, B - OLED

2

, .

, R, G, B OLED

, G - OLED

,

R - OLED, B - OLED

2

, G - OLED

. , 5 (a) A - A'

5 (b)

.

, .

5

.

6 (a) 1

R, G, B OLED

,

(Pt)

, (Au)

, .

, 6 (b)

6 (a)

B - B'

2

,

, 5nm

, 2

.

가

,

, , , .

,

,

,

,

, 가 , , (313) d , 1

.

6

3

가

.

, 160×120

.

1

, 2

.

100Hz

.

. ON

1

$6\mu A$

.

, ON

0V, OFF

7.5V

1000cd/m^2 가

, OFF

, ON

0V ,

7.5V,

, RGB

가 $200 \times 100\mu\text{m}^2$

,

.

3 가 , 2 가 1/1000 1.5 . , .

1 ,

1 , , .

(57)

1.

1 , 2 , ,

d가 1

$d \leq \lambda/4$ (λ :

.

2.

1 , 2 EL ,

,

EL .

3.

1 , 2 EL ,

,

EL ,

2 d가 1

$d \leq \lambda/4$ (λ :

.

4.

1 , , 2 EL ,

EL , 2 .

5.

1 , , 2 EL ,

EL , 2 d가 1 ,

$d \leq \lambda/4$ (λ :

6.

2 ,

EL , .

7.

6 ,

가 $50\mu m$.

8.

6 ,

9.

8 ,

가 , , .

10.

8 ,

EL 가 .

11.

2 ,
EL 가 .

12.

11 ,
가 .

13.

2 ,
.

14.

2 ,
EL .

15.

4 ,
.

16.

4 ,
.

17.

4 ,
2 .

18.

17 ,
2 .

19.

1 ,

2

20.

1

21.

20

,

가 1

, ,

22.

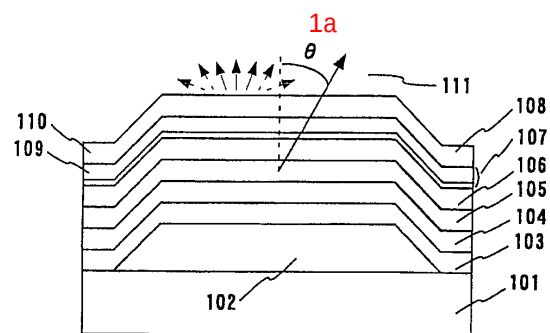
20

,

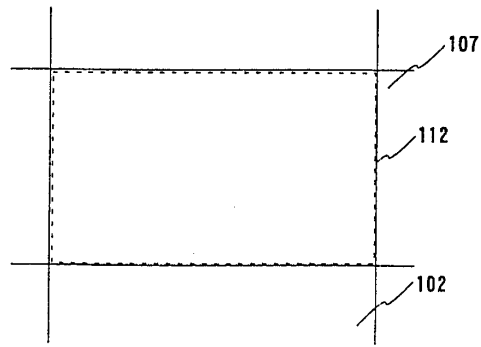
2

23.

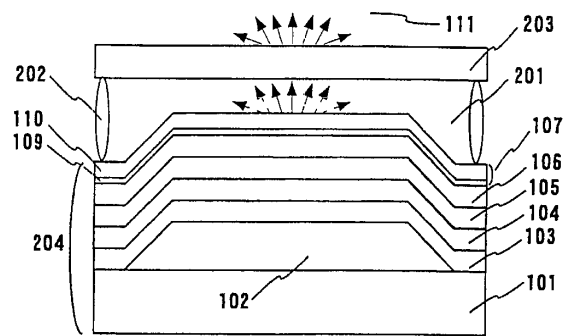
20



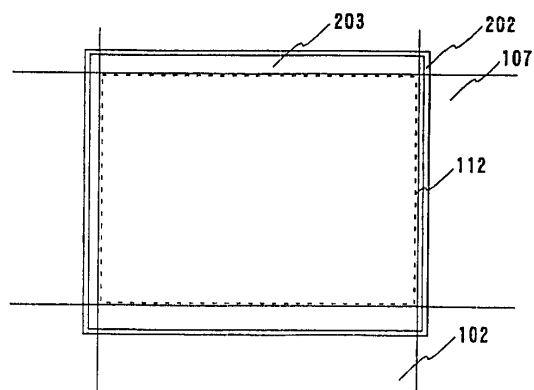
1b



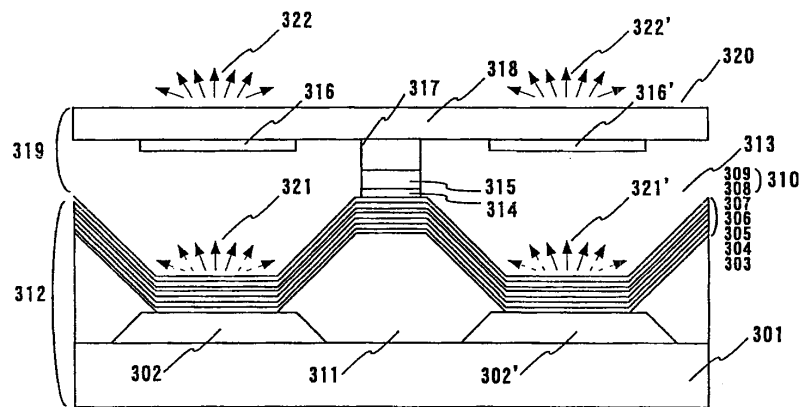
2a



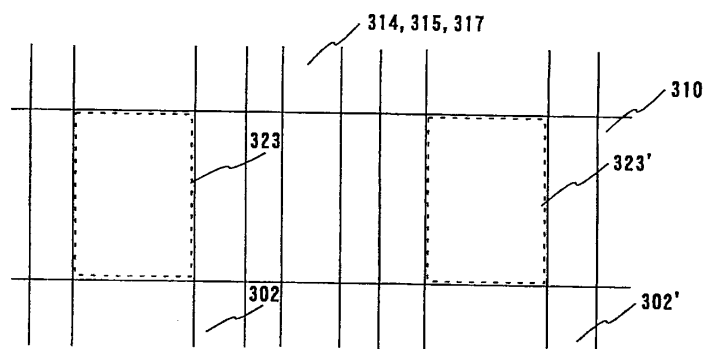
2b



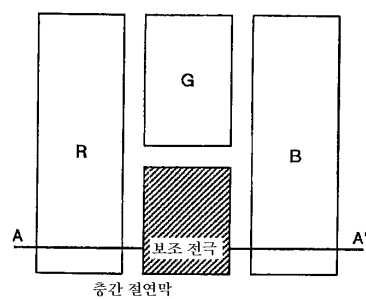
3



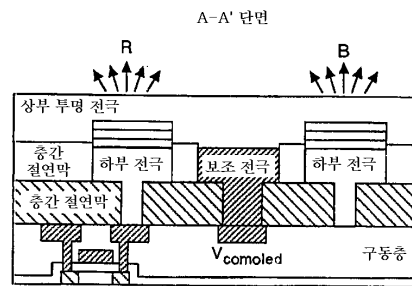
4



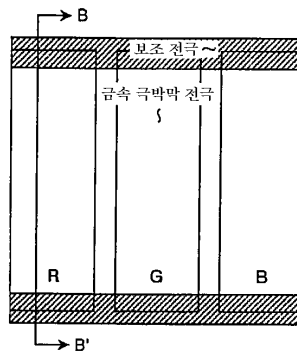
5a



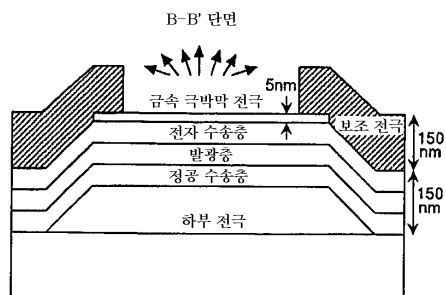
5b



6a



6b



专利名称(译)	有机发光显示器		
公开(公告)号	KR1020030019057A	公开(公告)日	2003-03-06
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发明人	이시하라신고 아라타니스게까즈 아다찌마사야		
IPC分类号	H05B33/22 H05B33/28 G09F9/30 H01L27/32 H01L51/50 H01L51/52 H05B33/02 H05B33/04 H05B33/12		
CPC分类号	H01L51/5212 H01L51/5234 H01L51/5253 H01L51/5262 H01L2251/5315		
代理人(译)	Jangsugil		
优先权	2001259572 2001-08-29 JP		
其他公开文献	KR100768995B1		
外部链接	Espacenet		

摘要(译)

一种有机电致发光器件，包括至少第一电极，有机层，第二电极和形成在基板上的保护层，其中从有机层中的发光区域到发射发光的空气层的距离d满足 $d \geq 1$ 。光学中心波长)。 - 1 - 指数方面 有机发光，肋骨，欧姆接触

