

(19)
(12)(KR)
(A)(51) 。 Int. Cl. ⁷
H05B 33/14(11)
(43)2003 - 0020034
2003 03 08(21) 10 - 2001 - 0052309
(22) 2001 08 29(71) .
20
(72) 가 307 - 801
2 103 - 610
1 305 - 86 459 - 122

(74)

:

(54)

가 .

, (RED) (GREEN) (BLUE) (sub pixel)

, (phosphorescent material) .

, .

1 ,

2 ,

3 ,

4 1 1 (full color)
,

5 1 2 (full color)
,

6 2 .

< >

100 : 102 :

104 : 106 :

108 : 112 : 1 (anode)

120a : 120b :

120c : 120d :

120e : 124 : 2

(organic electro - luminescent) ,

가 .

,

(band gap) 가 .

1 .

, (10) (electron) 1 (12) 2 (

14) , (16) .

(16) 1 (12) (Hole Transporting Layer : HTL)(16a) , 2

(14) (Electron Transporting Layer : ETL)(16c) , (16a)

(16c) 가 (" ")(16b) .

ctron) 가 (hole) (10) (exciton) 1 2 (ele
 , (16a) (photon out per charge injected)
 , (carrier) 2
 , (16b) (electron) (hole)
 가
 가 (10) , 가
 ,
 2
 , (30)
 1 (32) , 1 (32) (34) , (34)
 1 (32) (P)
 2 (36)
 : HTL) (34b) (34) (hole induced layer : HIL) (34a) (hole transporting layer
 (34c) (electron transporting layer : ETL) (34d)
 (34) 2 (36) (R_P, G_P, B_P)
 , (34) 2 (36)
 ,
 , (full color) (R_P, G_P, B_P)
 3
 , 1 (anode) 2 (cathode) (electron) (hole)
 (exciton)가
 , S=1/2 (singlet exciton) (20) S=1 (triplet exciton) (22)가 1 3 (Si
 (22) (intersystem crossing) (20)
 (spin - orbit coupling)

(24) , 가
(fluorescence)
(phosphorescence)

escence)

가

(full color)

(Full color)

가

가

가 ; 2 ; 1 2 , 1 ; 1 , , , .

1 - - (ITO) - - (IZO) .

2 (Al) (Ca) (Mg) , / (L

iF/Al)

1 (ETL) (HIL) (HTL) , 2

(ETL) (HBL) .

, .

- - 1 - -

1 (elect

ro - phosphorescence)

, 4 1 1 .

(100) (T) .

(T) (R_P,G_P,B_P) , (R_P,G_P,B_P) (

) , (P) (T)가 .

(102) (104,106) (108)

(T) .

(T) () .

(P) (multi layer) (120) , (120)

1 (112) 2 (124) .

, 1 (112) (work function)가 - - (ITO)

, 2 (120) 가 (Ca), (Mg), (Al)

, / (LiF/Al) .

1 (112) (120) (hole) (anode) , (106)

가 .

2 (122) (120) (cathode) ,

() .

() (100) () ()

. (R_P,G_P,B_P)

(phosphorescence material) (fluorescence material) , 1

(R_P,G_P,B_P) (120c) .

, (R_P,G_P,B_P)가 1

(anode) (112) (120a) (120b) (120c) (120e) 2 (12

4) .

, (R_P) (120c) .

, (120e)

.

(triplet) (electron) (singlet) (hole) (120e) 가 ,
 , (HBL) (120d) (120c) (120e)
 , (HIL) (120a) 1 (112) (HTL) (121b) 1 (112)
 , 5 1 2
 2
 , (200) (T)
 (T) (P) (R_P, G_P, B_P) , (R_P, G_P, B_P) (T)
 (208) , (202) (204, 206) (T)
 (T) ()
 , (P) (multi layer) (220) , (220)
 1 (212) 2 (224)
 (220) , 1 (212) - - (ITO) , 2 /
 (Ca), (Mg), (Al) (LiF/Al)
 1 (212) (220) (hole) (anode) , (206)
 가
 2 (224) (220) (cathode) ,
 ()
 () (200) () ()
 1 2 (R_P, B_P) (220)
 c)
 (220a) , (220b) (220c) (220c) (220d) 1 (anode) (212)
 2 (cathode) (224)
 (220d)

, (220a) (220d) (R_P,G_P,B_P)
(220c) .

, (220c) CBP(4,49 - N, N9 - dicarbazole - biphenyl) ,
BCP BA1q₃ .

, (220e) .

- - 2 - -

2
.

6 2 .

, (300) (T) .

(T) (R_P,G_P,B_P) , (R_P,G_P,B_P)
() , (P) (T) .

(302) (304,306) (308)
(T) .

(T) () .

, (P) (multi layer) (320) , (320)
1 (312) 2 (324) .

(320) (320a) (320b) (R_P,G_P,B_P)
(320c) (320d) (320e) .

, 1 (312) - - (indium - tin - oxide) 가
, 2 (224) (work function)가 (Al) ()
(Mg), (Ca) , / (LiF/Al) .

, (320c) (R_P,G_P,B_P)
(R_P,B_P) (320c) .

1 2

30% .

, 가 가

. 가 가

, 가 가 .

1.

가 ;

;

, 1 ;

1 2 ;

1 2 , , ,

.

2.

1 ,

1 - - (ITO) - - (IZO) .

3.

1 ,

iF/Al) 2 (Al) (Ca) (Mg) , / (L .

4.

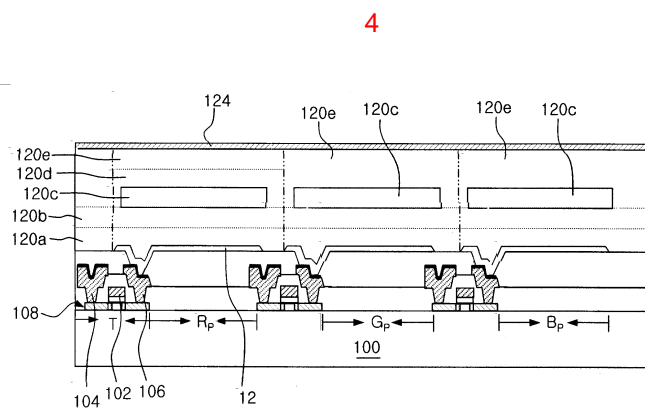
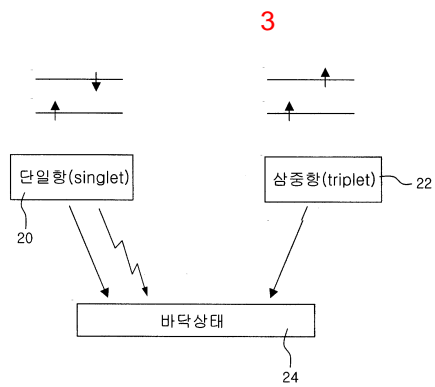
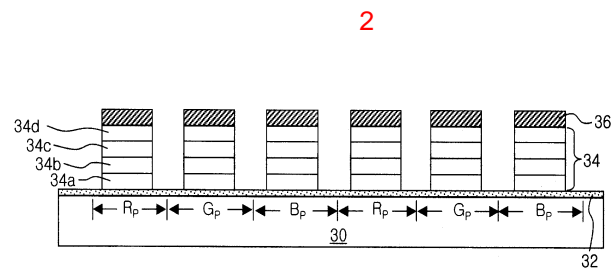
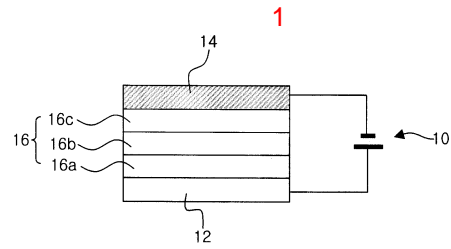
1 ,

1 (ETL) (HIL) (HTL) , 2 .

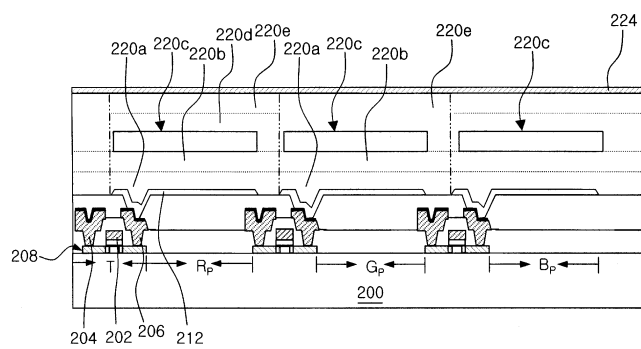
5.

4 ,

(ETL) (HBL) .



5



6

