

(19) (KR)
(12) (A)

(51) 。 Int. Cl. ⁷
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(43) 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

^ V

104 : 106 :

108 : 112 : 1 (anode)

120a : 120b :

120c : 120d :

120e : 124 : 2

(organic electro-luminescent)

가

(band gap)

가

1
14) , (10) (electron) 1 (12) 2 (16) .
1 (16) (12) (Hole Transporting Layer : HTL) (16a) , 2
1 (16) (Electron Transporting Layer : ETL) (16c) , (16a)
(14) (16c) 가 (" ") (16b)

1 (10) 2 (ele) .
 1 (16a) 2 (photon out per charge injected)
 1 (16b) 2 (electron) 3 (hole) .
 1 (10) 2 (ele) .
 2 (30) 3 (34) 4 (34)
 1 (32) 1 (32) 1 (32) (P) 2 (36) .
 1 (34) 2 (34b) 3 (34c) 4 (hole induced layer : HIL) 5 (hole transporting layer : HTL) 6 (34a) 7 (34d) .
 1 (34) 2 (36) 3 (R_P, G_P, B_P) .
 1 (34) 2 (36) .
 1 (full color) 2 (R_P, G_P, B_P) .
 3
 1 (anode) 2 (cathode) 3 (electron) 4 (hole) .
 1 (exciton) 2 (S=1/2 singlet exciton) (20) 3 (S=1 triplet exciton) (22) 4 (22) 5 (20) 6 (Si) .
 1 (22) 2 (intersystem crossing) 3 (spin - orbit coupling) .

(24)

escence)

가
 (fluorescence)
 (phosphor
 가

(full color)

(Full color)

가

가

2

1

2

1

1

1

(ITO)

(IZO)

2

(Al)

(Ca)

(Mg)

iF/Al)

(L

1

(HIL)

(HTL)

(ETL)

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) 2 (120) (work function) 가 (ITO)
 , , (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 (R_P,G_P,B_P) (120c) (120e) , 2 1
 (anode) (112) (120a) (120b) (120c) (120e) (120e)
 4)
 , (R_P) (120c)
 , (120e)

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

, (220a) (220d) (R_P, G_P, B_P)
 , (220c) CBP(4,49 - N, N9 - dicarbazole - biphenyl),
 BCP BAlq₃
 , (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)
 (320) (320)
 1 (312) 2 (324) (multi layer) (320) (320)
 (320) (320a) (320b) (R_P, G_P, B_P)
 (320c) (320d) (320e)
 , 1 (312) 2 (224) (indium - tin - oxide) (Al) (가)
 Mg), (Ca), / (work function) (LiF/Al) (가)
 , (320c) (R_P, G_P, B_P) (320c)
 (R_P, B_P)
 1 2 30%
 .
 , (가) (가) (가)
 , (57)

1.

가 ;

;

, 1 ;

1 2 ;

1 2 , , , ,

2.

1 ,

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

3.

1 ,

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

4.

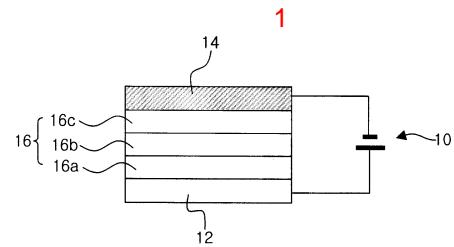
1 ,

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

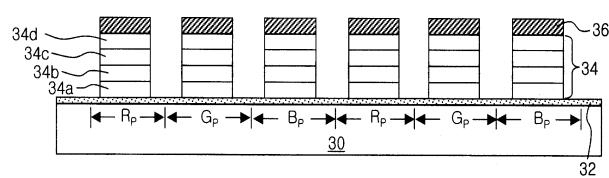
5.

4 ,

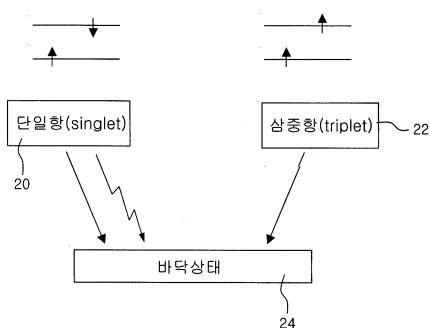
(ETL) (HBL)



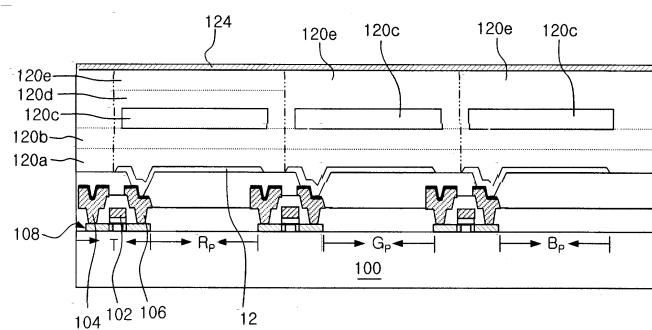
2



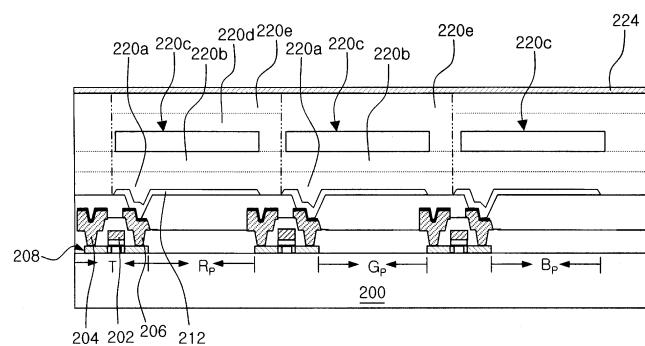
3



4



5



6

