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(11)
(24)

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(56) SDI

KR1020060056849 A* ()

KR1020070065647 A* (74)

KR1020050026845 A

KR10 20070049248 A

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: 21

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(54)

(57)

1 2 ,

.

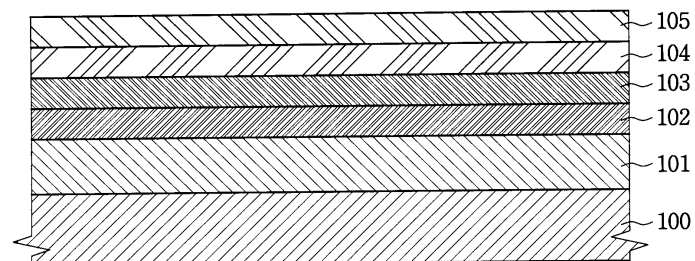
;

1 ; 1 , 2

2 ; , 1 2 0

100nm

- 1



(72)

SDI

SDI

1
;
1 1 ;
2 ;
1 2 , ,
1 1 2 0 100nm
2 0 350nm
.
2
3
1 ,
2 20 100nm 150 350nm
.
4
3 ,
2 50 80nm 180 200nm
.
5
1 ,
2 1 1.1
.
6
1 ,
1 1 2
.
7
1 ,
1 1.4 1.8
.
8
1 ,
1 2 (Nb₂O₅), (Ta₂O₅),
(Ti₂O₅), (Si₃N₄), (SiO₂), (Sb₂O₃), (Al₂O₃),
(ZrO₂), (MgO), (HfO₂),

9

1 , 2 1

10

1 , 1 2 , 1 1 1 , 2 1

11

1 , 1 2 , 1 2 , 2 1

12

;
, 2 , 1 ,
, 2 ,
1 2 ,
1 1 2 ,
1 2 1 0 100nm
, 2 0 350nm

13

14

12 , 2 20 100nm 150 350nm

15

14 , 2 50 80nm 180 200nm

16

12 , 1 2

17

12 ,

18

12 ,

2 1 1.1

19

12 ,

1 1 2

20

12 ,

1 1.4 1.8

21

12 ,

1 2 (Nb₂O₅), (Ta₂O₅),
 (Ti₂O₅), (SixNy), (SiO₂), (Sb₂O₃), (Al₂O₃),
 (ZrO₂), (MgO), (HfO₂),

22

12 ,

1 2 ,
 1 1 , 2 1

23

12 ,

2

[0001]

2 , 1

(internal

efficiency) (external efficiency) (light coupling efficiency)

PDP

[0003]

ITO

1/4

[0004]

63-314795

[0005]

8-250786

8-

213174 , 10-177896 (optical microcavity) ITO

TiO₂SiO₂

[0006]

[0007]

1 ; 1 ; 2 ; 1 2 1 2 0
100nm

[0008]

1 ; 2 ; 1 2 1 0 100nm

[0009]

1 2

[0010]

[0011]

[0012]

[0013]

[0014]

[0015]

[0016]

[0017]

[0018]

[0019]

1 (bottom)

1 (100) 2 (101) 2 (102) 1 (102)

1 (102) 1 (103), (104) 2 (105)

2 (105) ()

(100) (100) SiO₂

(PMMA), (PANI), (PET)

2 (101) 1 (102) 2 (105)

(104)

1 (102) n1, 2 (101) n2, n1

n2 1 (102) 0 100nm 1 (102)

100nm 1 (102)

1 (102)

1 (103) 2 (101) 0

100nm

1 (102) 100nm, 2 (101) 0 350nm

2 (101) 2 (101) 20 100nm 150

350nm 50 80nm 180 200nm 400 800nm

1 (102) 2 (101)

1 (102) 2 (101)

(Nb₂O₅), (Ta₂O₅), (Ti₂O₅), (SixNy), (SiO₂),

(Sb₂O₃), (Al₂O₃), (ZrO₂), (MgO),

(HfO₂), 1 (102) n1

2 (101) n2 n1 1.4 2

, n2 n1 1.1 1 (102) 2 (101)

n1 1 (103)

1 (101) 2 (102) - , , ,

(ion beam deposition) , (electron beam deposition) , (laser ablation)

, (CVD) (sputtering) ,

2 (101) (100) 1 (102)

1 (102) 2 (101) 1 (102)/ 2

- [0020] (102)/ 1 (102) .
 , 1 (103) ,
 1 (103) , ITO(Indium Tin Oxide), IZO(Indium Zinc Oxide), TO(Tin Oxide), ZnO(Zinc Oxide)
 1 (103) , Mg, Ca, Al, Ag
 1
- [0021] (104) , , , ,
- [0022] ,
- [0023] 4,4'- N,N'- - (4,4'- N,N' dicarbazole-
 biphenyl: CBP), -(2- -8-)-(4-) (bis(2-methyl-8-quinolinato)-4-
 phenylphenolate aluminum: BALq), 2,9- -4,7- -1,10- (2,9-dimethyl-4,7-diphenyl-1,10-
 phenanthroline: BCP), N,N'- -1,4- - (N,N' -dicarbazolyl-1,4-dimethene-benzene: DCB),
 (rubrene), 9,10- (2-) (9,10-bis(2-naphthyl)anthracene: AND)
 4,4'- (2,2'-)-1,1' (4,4'-bis(2,2'-diphenyl vinyl)
 -1,1'-biphenyl: DPVBi),
 (distyrylbiphenyl: DSBP), 10-(1,3- -2-y1)-1,1,7,7- -2,3,6,7- -1H,5H,11H-
 (2,3-f) (3,2,1-ij) -11-one(C545T), (Quinacridone)
 (2-) (Ir(PPy)₃), PQIr, Btp₂Ir(acac), 4-()-2- -6-(1,1,7,7-
 -9-)-4H- (DCJTB), 4-()-2- -6-(p-)-4H-
 (DCM), 2,3,7,8,12,13,17,18- -21H, 23H- - (PtOEP), Ir(piq)₂(acac), RD3(Kodak),
 EK8(Kodak)
- [0024] 4,4',4''- (3-) (m-MTDATA), 1,3,5- [4-(3-
)] (m-MTDATB), (CuPc), N,N'- (4-(N,N'- -))-N,N'-
 (DNTPD) , N,N'- -N,N'- (3-)-1,1'-
 -4,4'- (TPD), N,N'- (-1-)-N,N'- (α-NPD) 4,4'- (1-
) (NPB)
- [0025] BALq, BCP, CF-X, 3-(4-t-)-4- -5-(4-)-1,2,4- (TAZ)
 -TAZ , (160) 2-(4-)-5-(4-tert-)-1,3,4-
 (PBD), -PBD TAZ
- [0026] TAZ, PBD, spiro-PBD, Alq₃, BALq, SALq ,
 LiF, (Ga complex), Liq CsF
- [0027] (104) , , , , , ,
- [0028] 2 (105) . 2 (105) ,
 (Mg), (Ca), (Al), (Ag)
 1
 2 (105) , (Ag), (Al), (Cr), (Mo),
 (W), (Ti), (Au), (Pd)
 ITO, IZO, TO ZnO
- [0029] 2 2 . 1
- [0030] 2 , (200) 1 (201) . 1 (201)

1 (201) (202) (202) 2
 (203) . 2 (203) .
 [0031] 2 (203) , 2 (203) 1 (204)
 , 1 (204) 2 (205) . 1 1
 (204) n1 2 (205) n2 , 1 (204) 0
 100nm . , 2 (205) 0 350nm
 , 20 100nm 150 350nm, 50 80nm 180
 200nm .

[0032] 3 3 . 1
 , .

[0033] 3 , (300) (301), (302), (303), /
 (304,305) (306) . / (304,305) (30
 7) .

[0034] (307) 2 (308) , 2 (308) 1 (309)
 .

[0035] 1 (309) 1 (310) , 1 (310) (306)
 (304,305) . 1 (310)
 .

[0036] 1 (310) (311) , (311) 2
 (312) . 2 (312) .

[0037] , 1 (310) 2
 (312) , 1 (309) 2 (312) , 1
 (309) 2 (308) . 1 (309) 2
 (308) (302) (300) .

[0038] 4 4 . , ,
 , .

[0039] 4 , (R), (G) (B) (400) .
 (400) 2 (401) 2 1 (402) .
 1 (402) n1 2 (401) n2 , 1
 (402) 0 100nm . , 2 (401) 0 350nm
 . 20 100nm 150 350nm, 50 80nm
 180 200nm ,
 , 400 800nm , , 1
 (402) 2 (401)
 . 1 (402) 2 (401)

[0040] 1 (402) 1 (403R, 403G, 403B) . 1
 (403R, 403G, 403B) . 1 (403R, 403G, 403B)
 (404) .

[0041] 1 (403R, 403G, 403B) , (405R, 405G,
 405B) . (405R, 405G, 405B)
 , . (405R, 405G, 405B)
 , .

- [0042] (404) (406) . (405R, 405G, 405B)
(406) 2 (407) . 2 (407) .
- [0043] , 1 (403R, 403G, 403B))
, 2 (407) . 1 (402) 2 (407)
, 1 (402) 2 (401) .
- [0044] (400) 2 (401) , , (408R, 408G, 408B)
 . (408R, 408G, 408B)
 . (409) .
- [0045] , . ,
 , .
- [0046] < 1 4>
- [0047] 2 2.4 Nb₂O₅ 1 . 2
1 1.45 SiO₂ 30nm . 1 1
ITO 50nm . 1 DNTPD 75nm ,
NPB 15nm . AND(
) /EK8(Kodak) () 25nm .
Alq₃ 25nm , LiF 5nm
 . 2 Al 80nm .
- [0048] < 5 8>
- [0049] 1 4 1 90nm 1 4
 .
- [0050] < 1>
- [0051] 1 1 2 .
- [0052] < 2 5>
- [0053] 1 1 120nm 1 4
 .
- [0054] 1 2 1 4 5 8
 . 3 4 1 2 5
 .
- [0055] [1]
- [0056]

	Nb ₂ O ₅ (nm)	x	y	
1	50	0.149	0.093	62.7
2	80	0.134	0.140	89.7
3	180	0.134	0.145	82.3
4	230	0.154	0.131	86.6

[0057] [2]

[0058]

	Nb ₂ O ₅ (nm)	x	y	
5	50	0.124	0.141	96.5
6	80	0.125	0.209	120.2
7	180	0.127	0.179	111.1
8	230	0.137	0.142	96.6

[0059] [3]

[0060]

x	y	
0.145	0.202	112.5

[0061] [4]

[0062]

	Nb ₂ O ₅ (nm)	x	y	
2	50	0.141	0.403	153.4
3	80	0.165	0.268	130.9
4	180	0.137	0.263	137.6
5	230	0.140	0.344	134.8

[0063] 1 4 , 1 4 5 8 1 30nm 90nm
y 1 , y
.
1 100nm
.
2 5 2 120nm 2
1 , y 1
y
.

[0064] < 9 20>

[0065] 2 2.4 Nb₂O₅ 5 . 2
1 1.45 SiO₂ 30nm . 1 1
ITO 50nm . 1 DNTPD 145nm,
100nm, 75nm , NPB 15nm
.
()/RD3(Kodak)() 45nm,
Alq₃()/C545T() 45nm, AND()/EK8(Kodak
) () 25nm . Alq₃ 25nm
, LiF 5nm .
2 Al 80nm .

[0066] < 21 32>

[0067] 9 20 2 2.1 Ta₂O₅ 9 20
.

[0068] < 33 44>

[0069] 9 20 2 2.3 TiO₂ 9 20
.

[0070] < 45 50>

[0071] 9 2 1.8 SiN 8
9 .

[0072] < 6>

[0073] 9 1 2 9
.[0074] 5 8 9 50 , , ,
9 6 , , ,
.

[0075] [5]

	Nb2O5 (nm)	x	y		x	y		x	y	
9	20	0.662	0.338	131.2	0.265	0.671	132.2	0.145	0.124	87.8
10	50	0.661	0.339	204.8	0.264	0.693	177.5	0.129	0.131	95.4
11	80	0.670	0.329	195.5	0.328	0.642	159.9	0.123	0.213	124.4
12	100	0.673	0.327	148.3	0.342	0.619	135.0	0.141	0.187	121.0
13	120	0.670	0.333	122.4	0.302	0.641	130.3	0.147	0.132	101.1
14	150	0.660	0.340	139.7	0.256	0.695	162.6	0.129	0.144	95.0
15	180	0.661	0.338	207.2	0.300	0.667	162.8	0.125	0.188	113.8
16	200	0.668	0.332	204.5	0.329	0.635	147.7	0.138	0.166	118.7
17	230	0.673	0.327	143.8	0.306	0.640	140.2	0.141	0.145	102.8
18	270	0.662	0.338	133.3	0.273	0.686	160.5	0.129	0.168	103.6
19	300	0.660	0.340	192.4	0.308	0.656	151.8	0.135	0.157	114.3
20	350	0.673	0.327	155.8	0.292	0.658	151.6	0.135	0.162	102.1

[0077] [6]

	Ta ₂ O ₅ (nm)	x	y		x	y		x	y	
21	20	0.664	0.336	124.4	0.286	0.656	124.7	0.145	0.152	97.1
22	50	0.662	0.338	165.8	0.269	0.680	157.7	0.135	0.135	97.6
23	80	0.667	0.333	186.0	0.310	0.655	159.5	0.126	0.193	118.0
24	100	0.670	0.329	162.1	0.334	0.631	142.7	0.132	0.215	124.8
25	120	0.667	0.333	119.1	0.334	0.623	127.5	0.144	0.185	117.2
26	150	0.661	0.338	142.1	0.288	0.655	132.2	0.144	0.140	100.8
27	180	0.662	0.338	171.0	0.274	0.680	154.3	0.130	0.165	103.8
28	200	0.668	0.332	179.2	0.295	0.667	155.7	0.127	0.193	112.7
29	230	0.673	0.327	143.8	0.328	0.634	140.7	0.138	0.181	118.7
30	270	0.671	0.329	131.9	0.305	0.641	134.0	0.141	0.155	105.9
31	300	0.666	0.334	122.6	0.279	0.673	148.3	0.133	0.175	105.0
32	350	0.662	0.338	174.1	0.315	0.646	142.8	0.138	0.168	115.7

[0079] [7]

	TiO ₂ (nm)	x	y		x	y		x	y	
33	20	0.662	0.338	129.2	0.270	0.667	130.4	0.145	0.129	90.0
34	50	0.661	0.339	193.8	0.264	0.691	173.6	0.130	0.131	95.9

35	80	0.669	0.330	195.9	0.324	0.646	160.7	0.123	0.210	123.0
36	100	0.673	0.327	153.2	0.342	0.621	137.1	0.139	0.194	122.9
37	120	0.671	0.329	125.0	0.313	0.633	128.2	0.147	0.141	105.6
38	150	0.662	0.338	130.4	0.259	0.688	155.8	0.133	0.142	95.3
39	180	0.660	0.340	188.9	0.291	0.674	163.2	0.124	0.187	111.1
40	200	0.666	0.334	205.3	0.322	0.644	150.9	0.135	0.174	118.8
41	230	0.673	0.327	155.9	0.319	0.630	137.1	0.142	0.149	107.9
42	270	0.666	0.334	124.9	0.272	0.683	156.9	0.130	0.167	102.0
43	300	0.659	0.341	165.2	0.298	0.666	153.7	0.134	0.160	112.7
44	350	0.671	0.329	175.3	0.305	0.644	145.6	0.136	0.165	105.2

[0081] [8]

[0082]

	SiN (nm)	x	y		x	y		x	y	
45	50	0.664	0.336	141.1	0.285	0.663	139.1	0.140	0.152	102.1
46	100	0.668	0.320	155.8	0.320	0.641	141.9	0.133	0.206	120.7
47	150	0.669	0.331	121.6	0.320	0.631	121.9	0.146	0.176	111.6
48	200	0.664	0.336	129.7	0.287	0.664	139.9	0.136	0.171	107.2
49	300	0.670	0.330	130.4	0.317	0.633	126.3	0.144	0.168	110.7
50	350	0.665	0.335	123.0	0.292	0.662	139.2	0.135	0.188	110.1

[0083] [9]

[0084]

x	y		x	y		x	y	
0.667	0.334	114.2	0.317	0.635	115.3	0.145	0.202	112.5

[0085]

5 9 , 9 50 1 60nm , 2
, 2 0 350nm
6 , y
. 2 20 100nm 150 350nm, 50 80nm
180 200nm .

[0086]

, 1 100nm
, 2 0 350nm, 20
100nm 150 350nm, 50 80nm 180 200nm
, , 400 800nm .

[0087]

1 1 .

[0088]

2 2 .

[0089]

3 3 .

[0090]

4 4 .

[0091]

< >

[0092]

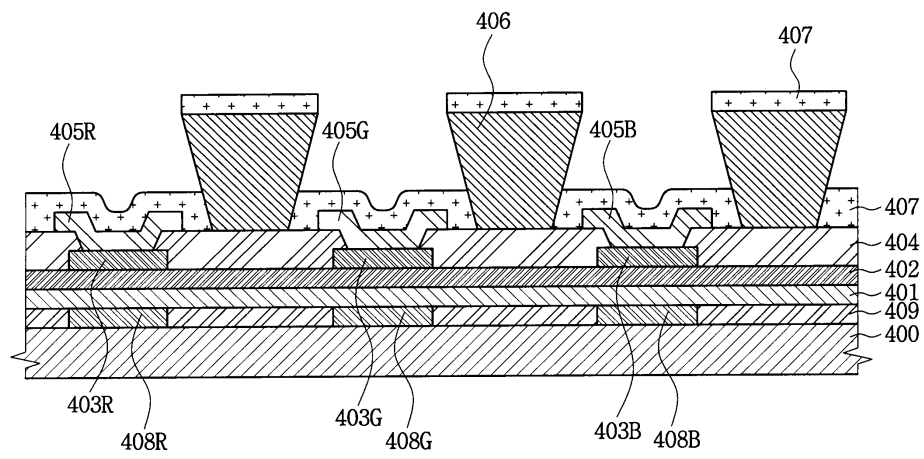
101, 205, 308, 401: 2

[0093]

102, 204, 309, 402: 1

A cross-sectional view of a semiconductor device 300. The device consists of a substrate 300 with a base layer 302. Above the base layer is a layer 307 containing a patterned layer 308 and a layer 309. A central structure 301 is formed on the substrate, with a top layer 310 and a side layer 311. The structure 301 is surrounded by a layer 304. The device is shown in a cross-sectional view with a central structure 301 and a surrounding layer 304.

4



专利名称(译)	有机电致发光显示装置		
公开(公告)号	KR1020090126955A	公开(公告)日	2009-12-09
申请号	KR1020080053339	申请日	2008-06-05
[标]申请(专利权)人(译)	三星显示有限公司		
申请(专利权)人(译)	三圣母工作显示有限公司		
当前申请(专利权)人(译)	三圣母工作显示有限公司		
[标]发明人	JUN HYUK SANG 전혁상 SONG OK KEUN 송옥근 JEONG HYE IN 정혜인 KOO YOUNG MO 구영모		
发明人	전혁상 송옥근 정혜인 구영모		
IPC分类号	H01L51/50 H05B33/22		
CPC分类号	H01L51/5265 H01L51/5275 H01L2251/558 H01L22/12		
其他公开文献	KR100953658B1		
外部链接	Espacenet		

摘要(译)

本发明涉及简单的结构和有机电致发光显示装置，提高光耦合效率和色域，亮度和色彩坐标得到改善，在所有辐射波长范围内的工艺，第二折射层的厚度位于电极和电极之间的基板之间。透光和第一折射层受到控制。本发明提供位于有机膜上的第二电极：有机膜，并且在发光层中产生的光位于电极的第一下部的上部或第二电极是具有该有机电致发光显示装置的有机电致发光显示装置。第一折射层的厚度为0到100nm，第一折射层的折射率低于第二折射层的折射率，第一折射层和第二折射层依次位于发射方向的外侧包括发光层的位于基板上的第一电极的表面：基板：第一电极。折射层和共振。

