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(A)

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(43)

2003-0044519
2003 06 09

(21)
(22)

10-2001-0075302
2001 11 30

(71)

1 633

(72)

102 504

LG

103 1201

3 266-34 1

659-9

696-6

(74)

:

(54)

1

1

2

3

4 .

5 UV .

6 1 .

7 1 .

()

1: 2: () 3:

4, 4a, 4b: 5: 6:

7: 8: 9:

10: 11: A, B, C, D:

,

, 가 (LCD) 가 가 (CRT) , 가

contrast), , 가 (

(Electro - Luminescence, EL) (ZnS)

가

EL (EL) ,

, 가 가

EL 가

fer layer) , 1 (hole transfer layer) 가 가 (Electron trans

가 (Excited state) (Ground state) 가 가

EL EL

. 1987 C. W. Tang (Appl. Phys. Lett., 51, 913 (1987)) 10V

(8-) (Alq₃) ,

, 6~7V 1,000cd/m² , 1.5 lm/W

가

, 가 가

, C. Adachi , , 3 (Jpn. J. Appl. Phys., 27(2), 269 (1988))

, 2 (Appl. Phys. Lett., 55 (15), 1489 (1989))

C. W. Tang Alq₃ 4- -6-(p-
) -2- -4H- (DCM1) (J. Appl. Phy
s., 65(9), 3610 (1989)).

EL

3 lm/W (Full width at the half maximum, FWHM) 1 lm/W

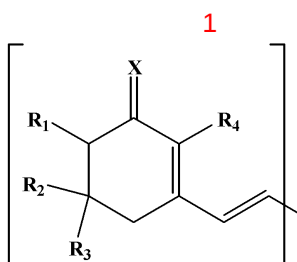
600 nm 100nm DCM1

가
1999-329731
,
100 nm
,
(Appl. Phys. Lett., 65 (17), 2124 (1994)).
,
가

X. T. Tao DCM1 3-(dicyanomethylene)-5,5-dimethyl-1-(4-dimethylamino-styryl)cyclohexene EL Alq₃ (Appl. Phys. Lett., 78 (3), 279 (2001)). 5,600 cd/m² 630~640 nm

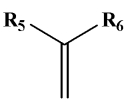
EL

EL



($\frac{1}{6}, R_1, R_2, R_3, R_4$, 1, 30)

X



, , 1 30

R5 R6
1 30

, ,

EL , EL 1 2

t- , , , , 2- , , , sec- , ter

가 .

α - , α, α - , α - , α, α - , α ,
가 .

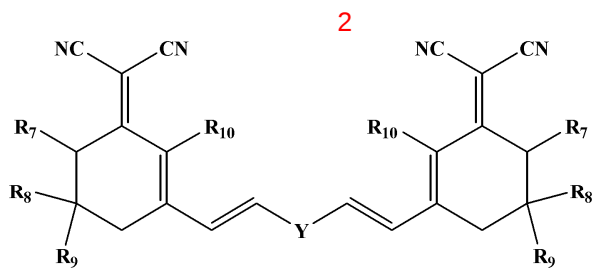
, R₂ R₃ 가 .

, R₅ R₆ 가 .

, 1 Y , Y가 .

, 가 , 2

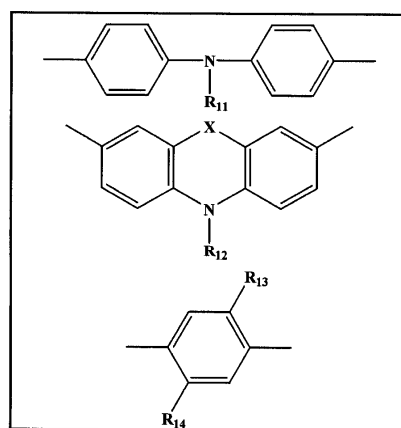
.



(, R₇ , R₈ , R₉ R₁₀ , 1 30 , Y 1 30 .)

, Y가 3 .

3


$$\left(\begin{array}{cc} R_{11} & R_{12} \\ 6 & 30 \end{array} \right), \quad \begin{array}{cc} 1 & 30 \\ 6 & 30 \end{array},$$

X, 1 30 2가, 6 30 2가

$$R_{13} \quad R_{14} \quad 1 \quad 30 \quad , \quad 1 \quad 10$$

$$, \quad 1 \quad 10 \quad , \quad 1 \quad 30 \quad , \quad 1 \quad 30$$

$$.)$$

가

2-

4 8

1- , 2- ,

가 2~15가

2~15가

가

2가

1 40

2가

2~10 , 2

가

가

) , () , (

가

()

()

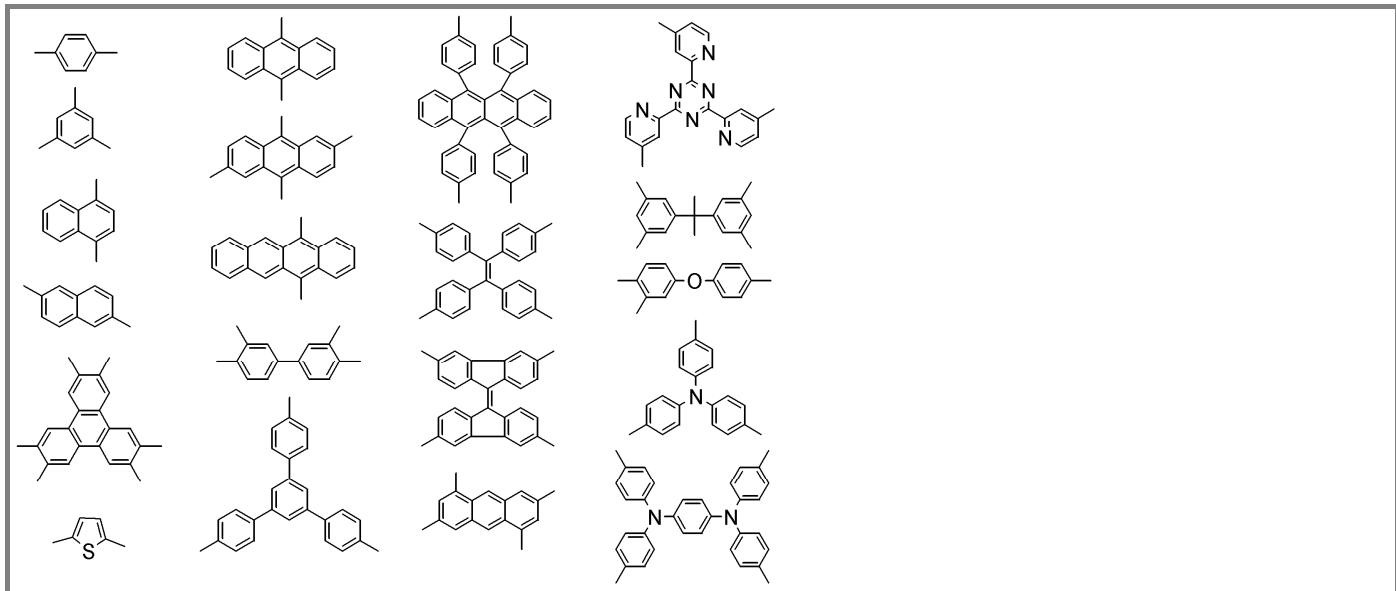
()

1

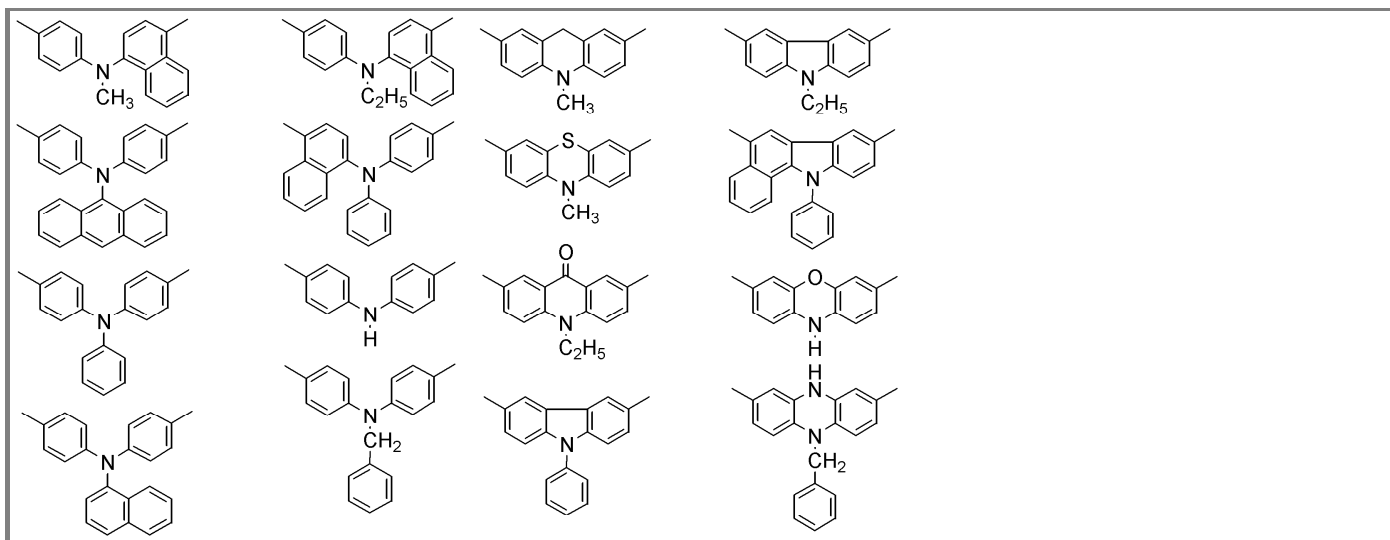
1

4

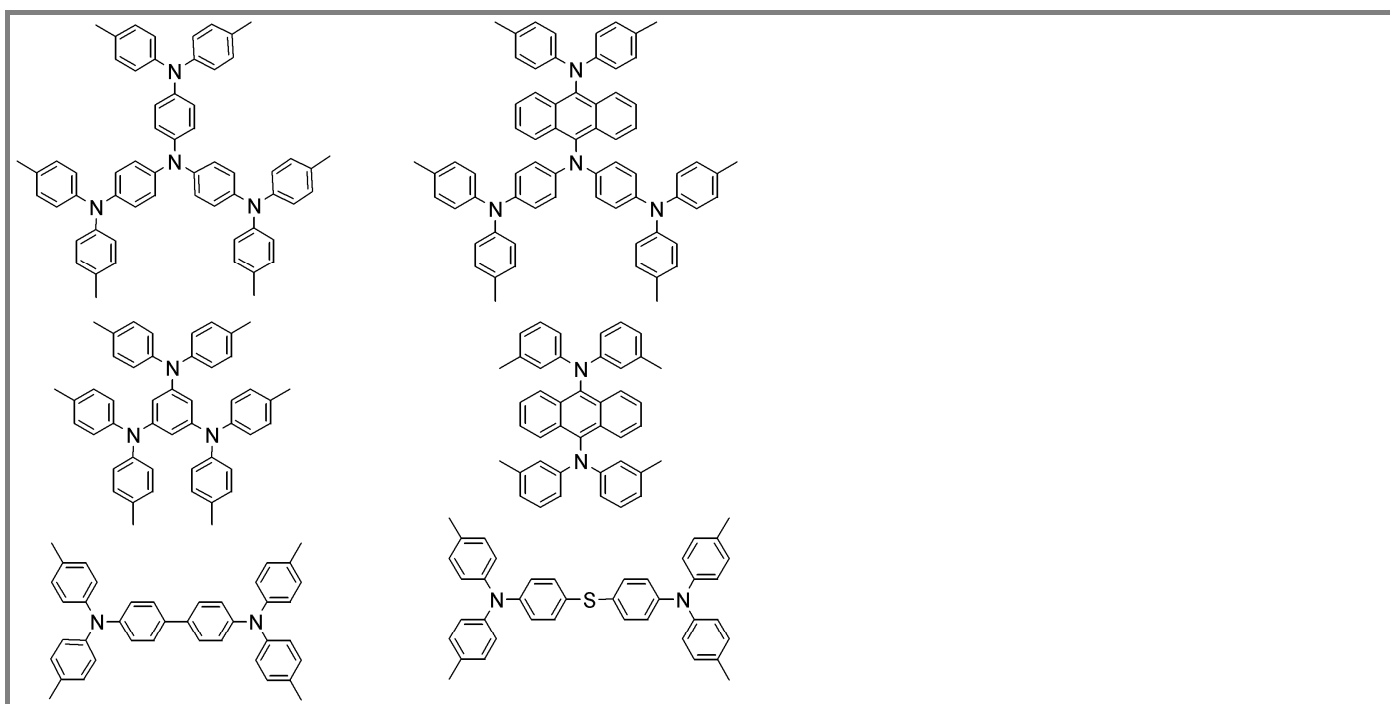
< 1>



< 2>



< 3 >

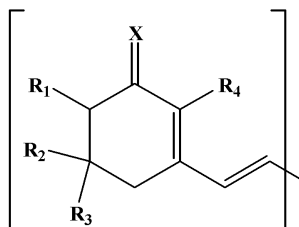


< 4 >



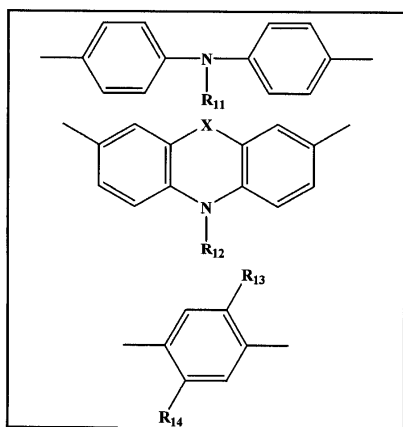
Y 1 2 , 3

< 1>



(, R₁, R₂, R₃, R₄ X .)

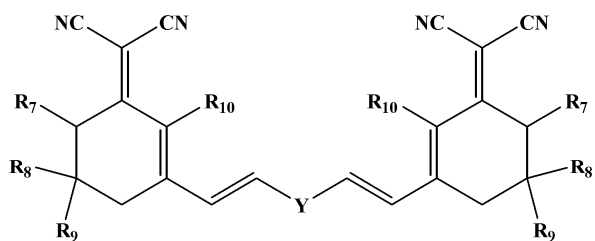
< 3>



(, X, R₁₁, R₁₂, R₁₃ R₁₄ .)

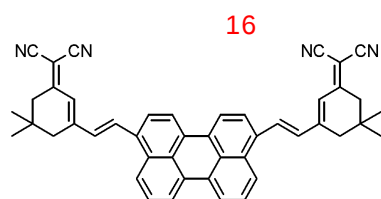
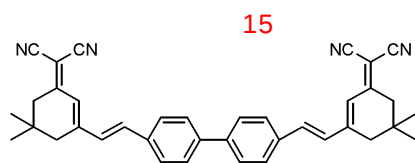
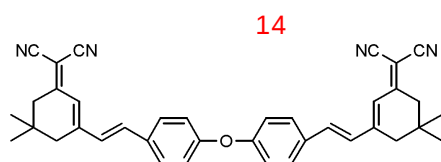
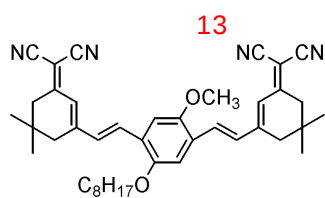
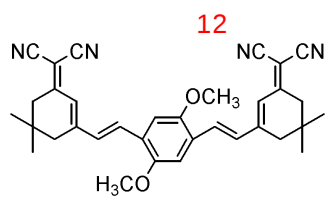
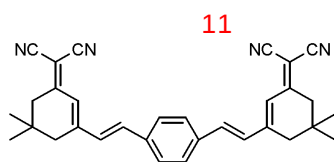
, EL (ground state vibrational level)

< 2>

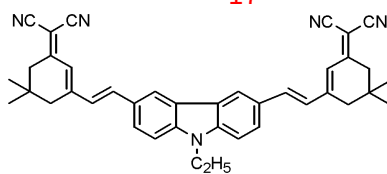


(, R₇, R₈, R₉, R₁₀ Y .)

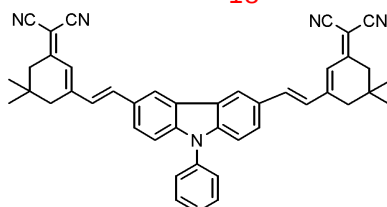
, 2 11 40 ,



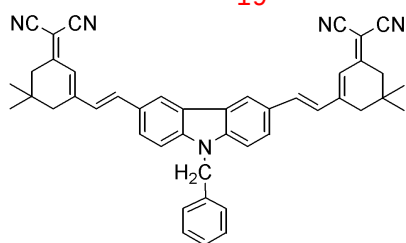
17



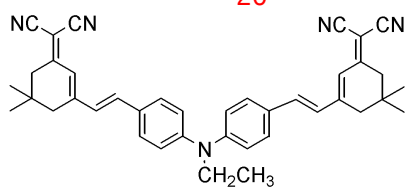
18



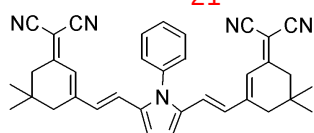
19



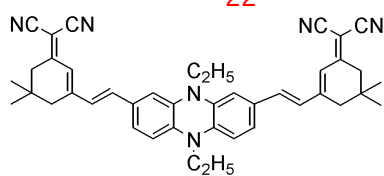
20



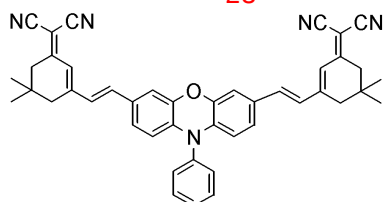
21



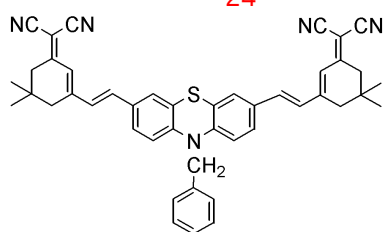
22



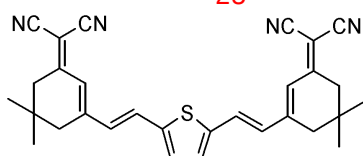
23



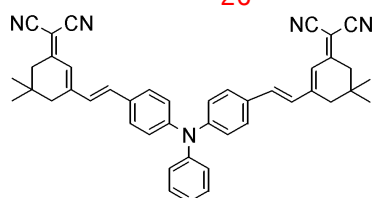
24

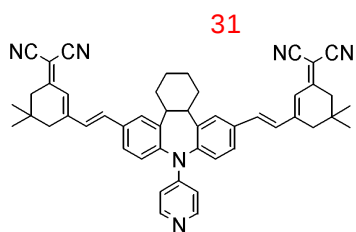
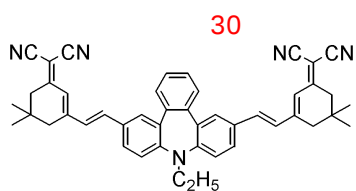
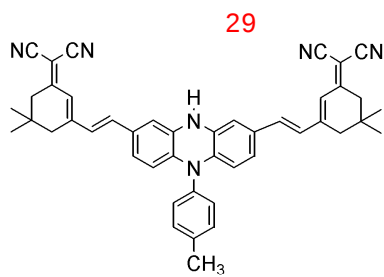
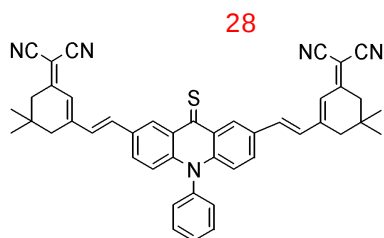
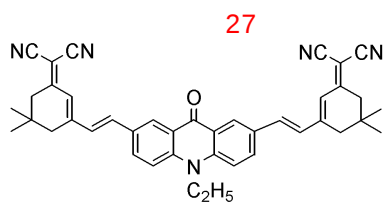


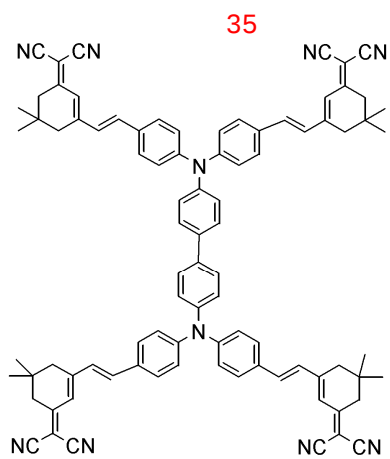
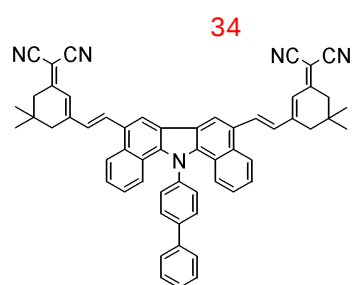
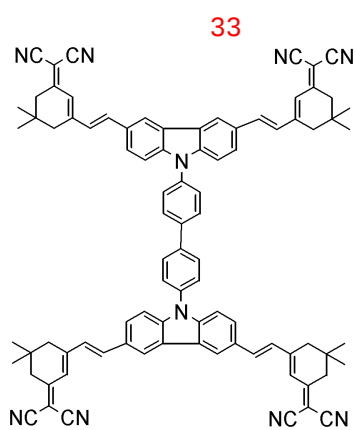
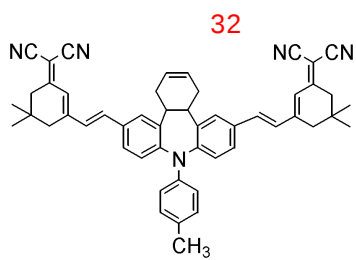
25



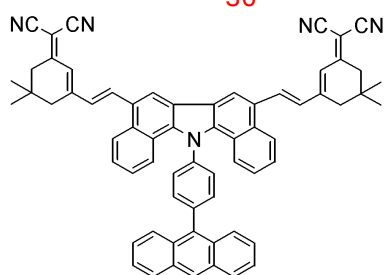
26



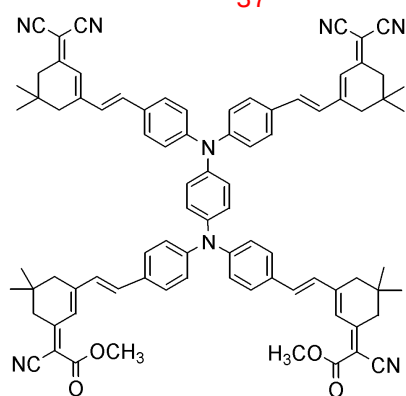




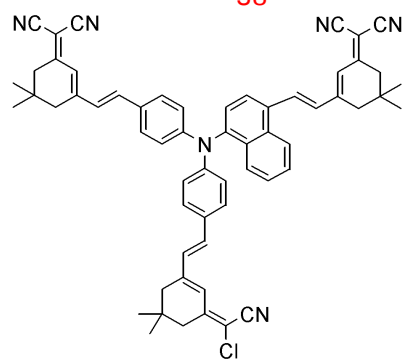
36



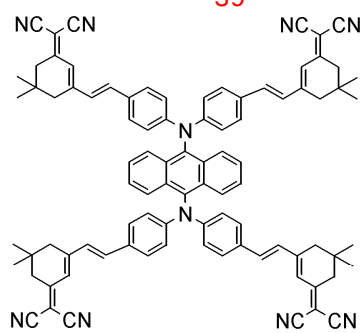
37

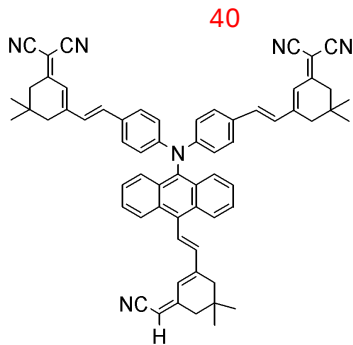


38



39





omethylene)-1-methyl -5,5-dimethyl-cyclohexene
(CH₃ CN)

1, 3-(dicyan

, DBU()

13 5

(PL) 50 nm

EL

EL

/ EL 가 / / , / ,

1

1

1, 2, 3 4

1 A (1)
, (Indium Tin Oxide, ITO), SnO₂ . (2) ()

1 A (3)
, Li, Mg, Ca, Ag, Al, In , 2

1 A (4)
(4) 가 (4) 1 , 2

(4) 1 , 1 1 , 2 가

(4) 1 1 , 2

2

2 B (1)
(2) () ITO, SnO₂ .

2 B , (3) .
 , Li, Mg, Ca, Ag, Al, In ,
 2 가 .

2 B (4a) (5) (6)
 .

2 B (5) 4,4- [N-(1-)-N- -
] (α -NPD) N,N'- -N,N'- (3-)-1,1'- -4,4'- (, TPD
) (N-)(PVCz , 2) . (5)
 2 (5)

2 B (6) (6) . (6)
 (6) (Alq₃) .

2 B (2) (5)
 (3) (6) LiF 가

3 C (1) , ,
 (2) () , ITO, SnO₂ .

3 C (3) .
 , Li, Mg, Ca, Ag, Al, In ,
 2 가 .

3 C (5b) (7) (8)
 .

3 C (7) 1
 , 1 , 2
 (TPD) .

3 C (8) Alq₃ ,
 (8) 2 , 2 .

3 C (2) 가
 (7) (3) (8) LiF

3 , 4 5
 , 3, 4 .
 4

4 D (1) , ,
 (2) () , ITO, SnO₂ .

4 D (3) .
 Li, Mg, Ca, Ag, Al, In ,

2 가 .

4 D , (4b) (9) (10) (11) .

4 D , (9) α -NPD TPD PVCz , (9) 2 , 2 .

4 D , (10) 1 , 2 (Alq₃) .

4 D (11) Alq₃ , (8) 2 , 2 .

4 D , (2) 가 (9) (3) (11) LiF .

1, 2, 3 4 (2) (3) 가 .

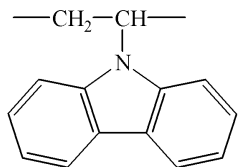
가

1

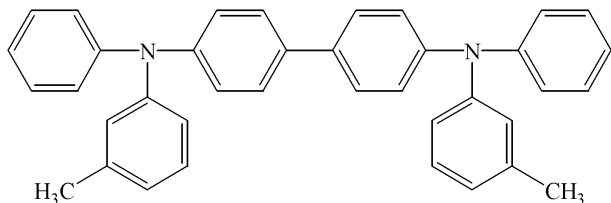
13 2 EL . ITO (8 Ω /square) , 4 , 5 TPD() 1:1 .

-(N- 40 nm ITO)

< 4>

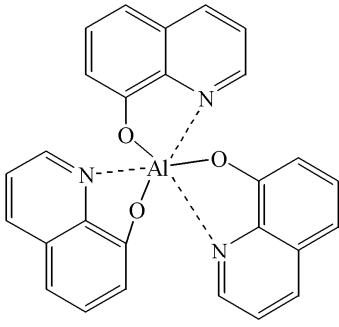


< 5>



100:1 6 Alq₃ 13 50 nm , 0.1 nm/s .

< 6>



10:1 MgAg
3 mm
600 nm MgAg
EL

1 EL
6
13 V 9600 cd/m²
가
645 nm FP-77
가
50 nm
7

2

13
648 nm EL
12
가 12 V 10100 cd/m²
1
가

3

13
617 nm EL
17
가 16 V 8000 cd/m²
1
가

4

13
642 nm
14
50 nm EL
1
가 15 V 9200 cd/m²
가

5

13
615 nm EL
16
가 15 V 8400cd/m²
1
가

6

13
645 nm EL
31
가 17 V 7600 cd/m²
1
가

EL
EL
가
가

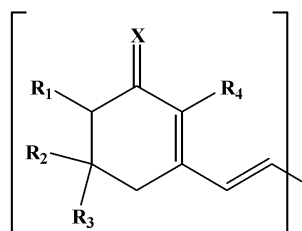
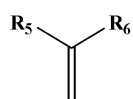
(57)

1.

EL

1 2

< 1>


$$\left(\frac{1}{6}, R_1, R_2, R_3, R_4, 1, 30 \right),$$

$$X \quad \parallel \quad ,$$

R5 R 6
 1 30

.

,

,

1 30

2.

1 _____, _____, _____, _____, sec- _____, tert- _____,
_____, _____, _____, _____, 2- _____, _____

3.

$$1 \quad , \alpha - \quad , \alpha , \alpha - \quad , \alpha , \alpha -$$

4.

1, R_2, R_3 가 .

5.

1, R_5, R_6 가 .

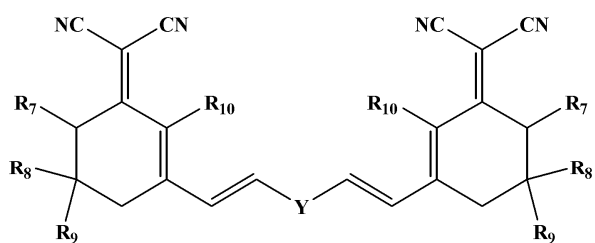
6.

1, 1 Y, Y가 .

7.

6 , 가 , 2

< 2>



(R_7, R_8, R_9, R_{10}, Y), $1 \leq Y \leq 30$.)

11.

9, α , α -, α -, α , α -, α , α -.

12.

9, R_2 , R_3 가.

13.

9, R_5 , R_6 가.

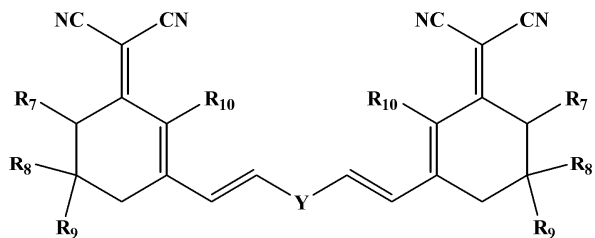
14.

9, 1 Y, Y가.

15.

14, 가, 2.

< 2>

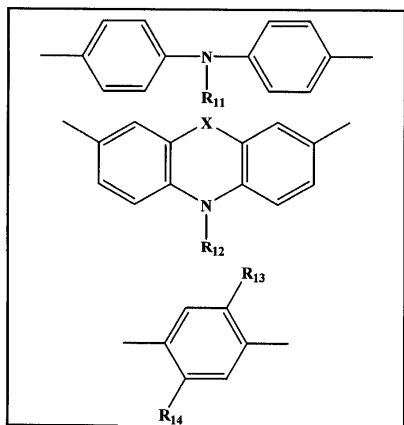


(R_7, R_8, R_9, R_{10} , 1 30, Y, 1 30.)

16.

15, Y가 3.

< 3>

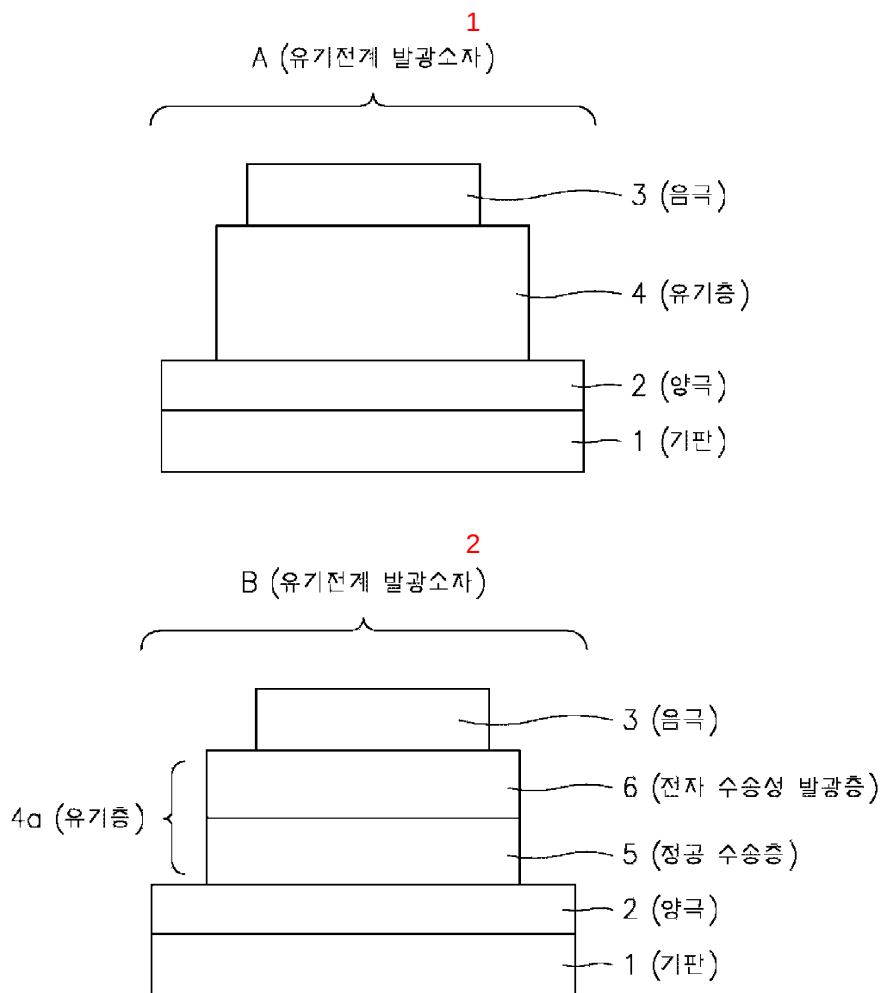


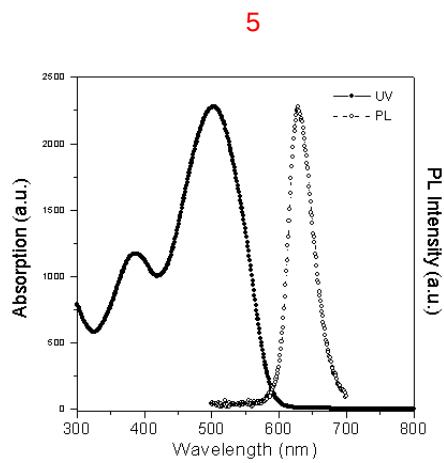
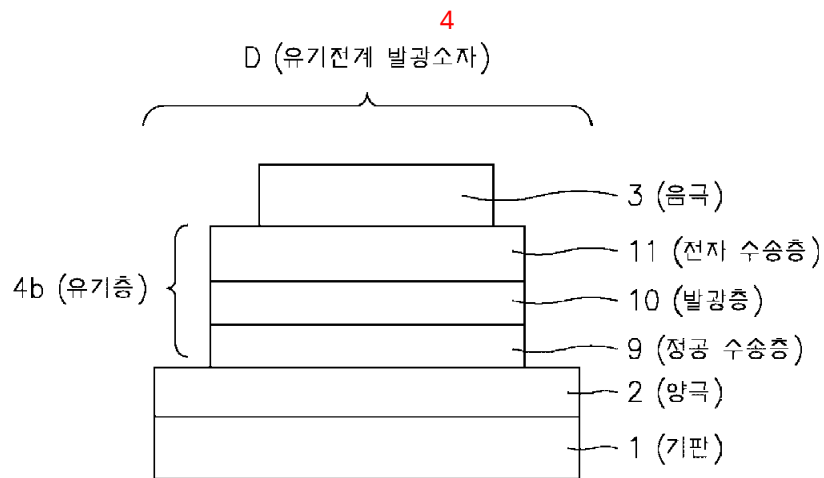
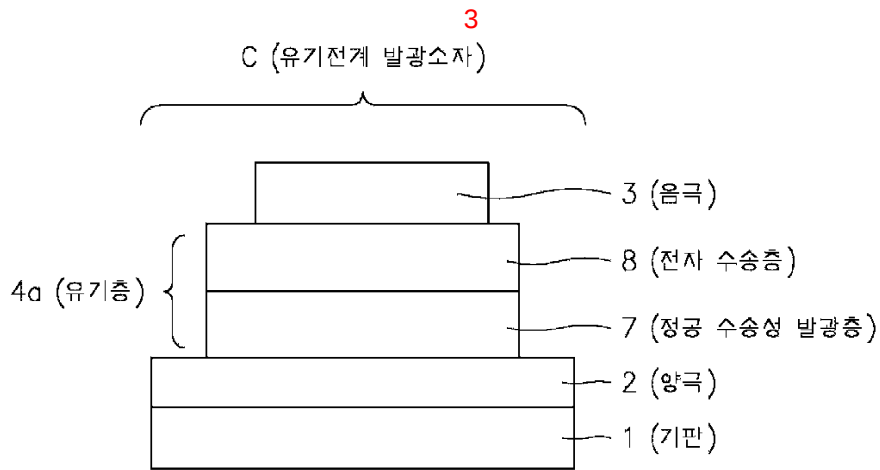
(R_{11}, R_{12} , 1 30, 1 30, X, 6 30 2가, 6 30 2가, 1 30, 1 10)

X, 1 30 2가, 6 30 2가, 1 30, 1 10

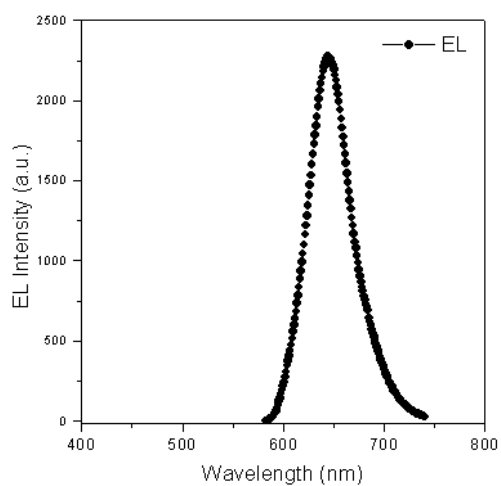
R_{13}, R_{14} , 1 30, 1 10

- , 1 10 , 1 30 , 1 30
, .)
17. 9 , / / , / , /
18. 17 , ,
19. 17 , .

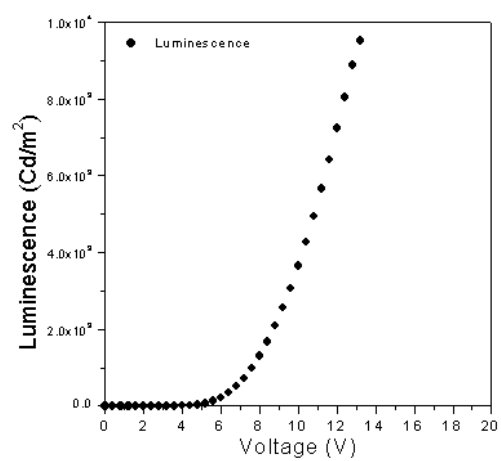




6



7



专利名称(译)	发光材料和使用其的有机电致发光器件		
公开(公告)号	KR1020030044519A	公开(公告)日	2003-06-09
申请号	KR1020010075302	申请日	2001-11-30
[标]申请(专利权)人(译)	SKC株式会社		
申请(专利权)人(译)	SK株式会社先生		
当前申请(专利权)人(译)	SK株式会社先生		
[标]发明人	PARK SANGHOON 박상훈 JANG MINSIK 장민식 BYUN KINAM 변기남 SHIM HONGSHIK 심홍식 LEE YOUNGJIN 이영진		
发明人	박상훈 장민식 변기남 심홍식 이영진		
IPC分类号	C09K11/06		
CPC分类号	C09K11/06 C09K2211/1425 C09K2211/1433 C09K2211/1466 C09K2211/1475 C09K2211/1483 H01L51/0035 H01L51/0043 H01L51/5012 H05B33/14 Y10S428/917		
代理人(译)	LEE , HAK SOO		
其他公开文献	KR100549854B1		
外部链接	Espacenet		

摘要(译)

目的：提供用于有机电致发光器件的发光材料和使用该发光材料的有机电致发光器件，以通过减小发光波长的半宽来改善色纯度，亮度寿命和亮度。组成：发光材料包括单环化合物或具有至少两个由通式1表示的取代基的稠合多环化合物，其中R1，R2，R3和R4独立地为H，C1-C30的取代或未取代的烷基或取代的或未取代的C6-C30芳基；X是O =或R5-C(-R6) =；R5和R6独立地为氰基，卤原子，C1-C30的烷基羰基或C1-C30的烷氧基羰基。优选式1的取代基与Y连接，Y是给电子体。优选地，发光材料包括式2的对称分子结构化合物，其中R7，R8，R9和R10是H，C1-C30的取代或未取代的烷基或C6-C30的取代或未取代的芳基；Y是供电子部分。

