

(19)  
(12)

(KR)  
(A)

(51) 。 Int. Cl.<sup>7</sup>  
C09K 11/06

(11)  
(43)

10-2004-0060275  
2004 07 06

(21) 10-2002-0086824  
(22) 2002 12 30

(71) 20

(72) 106 1202

102 104

110 801

580 218 904

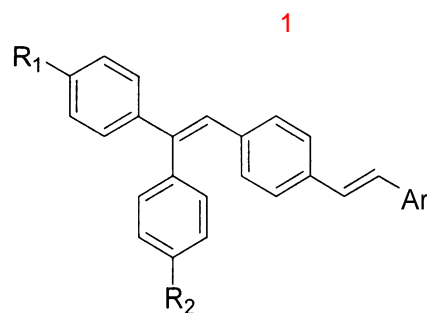
1 202 902

(74)

:

(54)

가 가 , 1 가 ,



, Ar, R<sub>1</sub> R<sub>2</sub>

1

1

< >

1: 2:

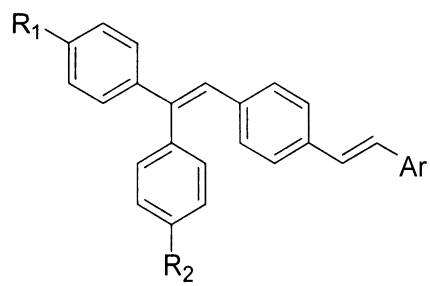
3: 4:

5: 6:

7: 8:

, 가 1 가 가

[ 1]



, Ar, R<sub>1</sub> R<sub>2</sub>

1

가 ,

1 ( ) 2 ( )  
1 1

가 가

(Cathode Ray Tube: CRT),  
(Light Emitting Diode: LED),  
(Liquid Crystal Display: LCD)

(Electroluminescence Display: ELD),  
(Plazma Display Panel: PDP)

가 , 가 (back light) 가  
가 가

가 가

, 1987

(Eastman Kodak)

200 V , 가 가  
(alumina quinone)  
가

(electroluminescence device : EL device)

(emmitter layer)

가 가 가

가 가 가

ers 51 12 913-915 1987 C. W. Tang (Applied Physics Lett  
) (8- ) (1987 )) ( Alq3 ) ( )  
, C. Adachi , 3 (Japanese Journal of Applied Physics 27  
2 L269-L271 (1988 )) , 2 (Applied Physics Lett  
er 55 15 1489-1491 (1989 ))

1 ( ) 2 ( ),

1 / 1 / / / 2 / 2

가 ( )

(exiton)

가

( 1 ).

de, In<sub>2</sub>O<sub>3</sub> + SnO<sub>2</sub>)가 1 ( ) . , ITO(Indium tin oxide)

(HIL: Hole Injecting Layer)  
 (CuPC: copper(II) phthalocyanine) 10 30 nm .

(HTL: Hole Transport Layer) . NPD(N,N-di(naphthalen-1-yl)-N,N'-diphenylbenzidine) 30 60 nm .

(Organic Emitting Layer) . ,  
 (host) Alq3(tris(8-hydroxy-quinolate)aluminum) 30 60 nm ,  
 (host) MQD(N-methylquinacridone)

(ETL: Electron Transport Layer) (EIL: Electron Injecting Layer)  
 Alq3  
 20 50 nm , 30 50 nm  
 / Alq3

2 ( ) . ,  
 - (full-color) , , 3가

Alq3 (ETL) Alq3 ,

6(Coumarine 6) (Quinacridone)  
 DCM1 DCM2 DCM(4- -6-(p- ) )  
 -2- -4H- ) 가 ,

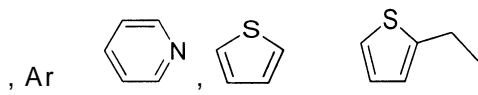
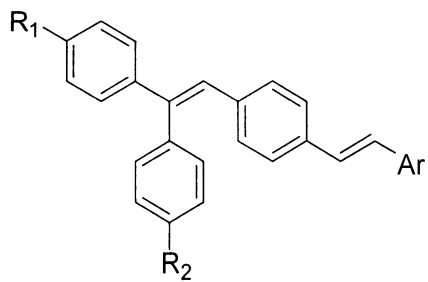
(Idemitsu: 出光興山) 가 가  
 [H. Tokilin, H. Higashi, C. Hosokawa, EP 388, 768(1990)],  
 가 [Pro. SPIE, 1910, 180(1993)].

가 , 가 .

1 ( ) 2 ( )  
1

1

[ 1 ]

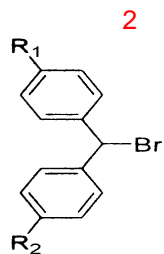


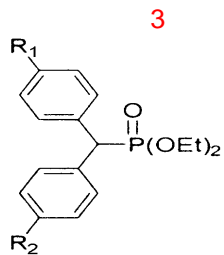
R<sub>1</sub> R<sub>2</sub> H, -CH<sub>3</sub> -C(CH<sub>3</sub>)<sub>3</sub>

1

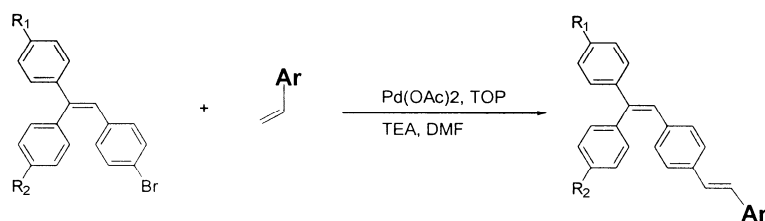
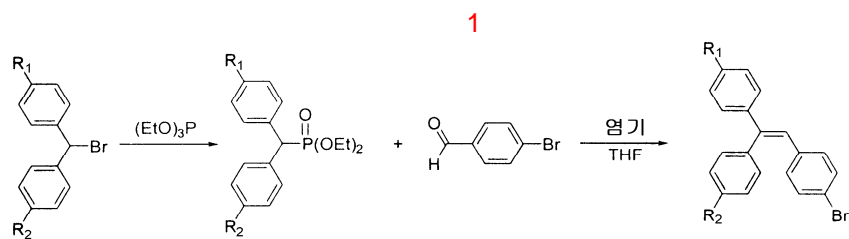
1

- 1) 2 ; 3
- 2) 1) 3 4- 4 1- -4-(  
2,2- ) ;
- 3) 2) 4- , 4- 2- -4-  
1





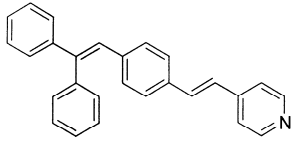
, R<sub>1</sub> R<sub>2</sub> 1 .  
1 .



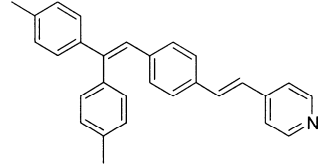
20 25 , X, R<sub>1</sub> R<sub>2</sub> 1 110 150 , 16 30 1  
24 , 160 , 가 ,  
, , N,N'- , 가 1 2.5가 .  
2 0 70 , 25 35 , 6 30 ,  
19 21 , , ) , 1,4- ,  
( , , , t-BuOK ,  
3 25 140 , 100 110 , 6 30

20, 24, N,N'- 가 t-

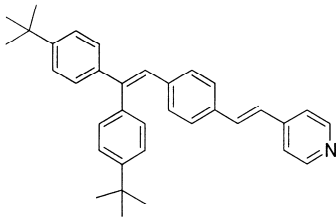
1



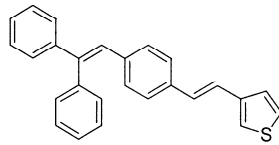
화1



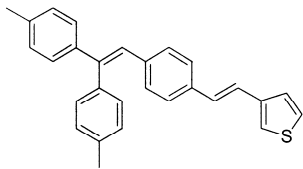
화2



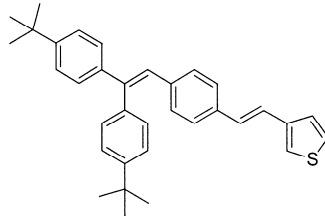
화3



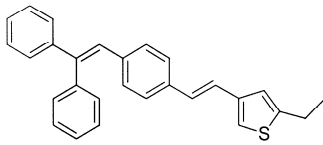
화4



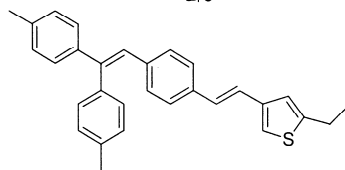
화5



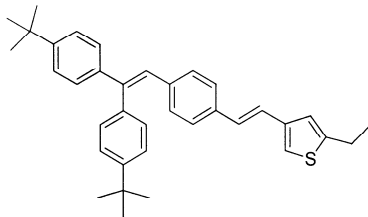
화6



화7



화8



화9

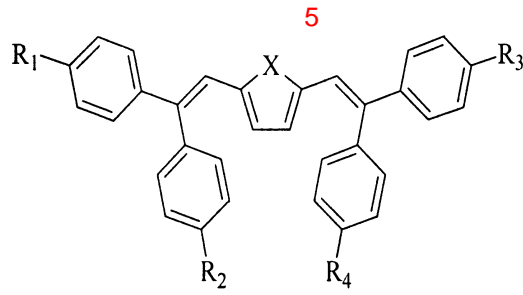
1 ( ) 2 ( )

1

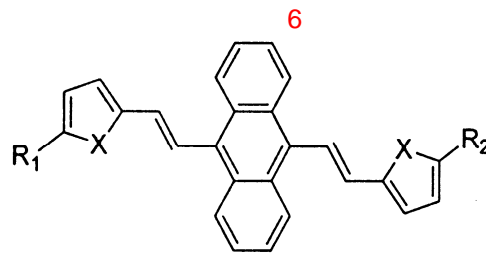
1

5

6



X O S  
 R<sub>1</sub>, R<sub>2</sub>, R<sub>3</sub> R<sub>4</sub> H, -CH<sub>3</sub> -C(CH<sub>3</sub>)<sub>3</sub>



X O S  
 R<sub>1</sub> R<sub>2</sub> H -CH<sub>2</sub>CH<sub>3</sub>

가 가

( ) ( ) , (1) /  
 / / , (2) / / / / , (3) / / / / , (4) / / / /  
 / / / / , (5) / / / / , (6) / / / /  
 / / / / (7) / / / /

가 4.0 eV

ITO, SnO<sub>2</sub>, ZnO, Au

(sputtering)

가 4.2 eV

200 nm /mm , 10 nm 1 μm, 50

(6) 1

(1) (sputtering) (2) (3),

(4) (6) (7) (8) (5), (6)

(5) 1 (dopant) (host)

(2) ITO(In<sub>2</sub>O<sub>3</sub>+SnO<sub>2</sub>) IZO(In<sub>2</sub>O<sub>3</sub>+ZnO)

(3) (naphthalen-1-yl)-N,N'-diphenylbenzidine (copper(II) phthalocyanine) (4) NPD(N,N-di

(5) Alq3(tris(8-hydroxyquinolate)aluminum) , Alq3 가 가 ,

(6) )-5-(4-tert- )-1,3,4- 가 2-(4- -

(Cs, Rb, K, Na, Li) (Li<sub>2</sub>O)가 , Mg/Ag, Al, Al/Li, Al/Nd

가

[ ]

[ 1 ]

4-[2-{4-(2,2- ) } ]

1)

가 100mL 17.3mL(0.101mole), 30ml , 110 24 10g(0.040mole),

가 20mL 4 8.6g ( : 70%)

2) 1- -4-(2,2- )

가 5.3g(28mmole) 50mL 가 8.6g(28mmole) 4- 3.8g(34mmo

le) 20 50mL

50mL 20ml

5.6g(0.017mmole, 60%)

3) 4-[2-{4-(2,2-

1- 4-(2,2- ) 5g(14.9mmol), 4- 2g (19.0mmol), (II) 0.2g (0.8mmol)  
 ), - o - 2.3g (7.5mmol) 50mL , 10mL N,N'-  
 20mL 가 . 200mL 가 가 . 100 24  
 , : (4:1)

<sup>1</sup> H-NMR : 7.0(q, 3H), 7.2 ~ 7.4(m, 16H), 8.5(d, 2H)

[ 2]

4-[2-{4-(2,2-

1- 4-(2,2- ( ) ) 5g(14.9mmol), 4- 2g (19.0mmol), (II) 0.2g  
 (0.8mmol), - o - 2.3g (7.5mmol) 50mL , 10mL N,N'-  
 20mL 가 . 200mL 가 가 . 100 24  
 , : (4:1)

[ 3]

4-[2-{4-(2,2- (4-t-

1- 4-(2,2- (4-t- ) ) 5g(14.9mmol), 4- 2g (19.0mmol), (II)  
 0.2g (0.8mmol), - o - 2.3g (7.5mmol) 50mL , 10mL N,N'  
 - 20mL 가 . 200mL 가 가 . 100 24  
 , : (4:1)

[ 4]

2-[2-{4-(2,2- (4-

1- 4-(2,2- (4- ) ) 5g(14.9mmol), 2- 2.1g (19.0mmol), (II)  
 0.2g (0.8mmol), - o - 2.3g (7.5mmol) 50mL , 10mL N,N'  
 - 20mL 가 . 200mL 가 가 . 70 30  
 , : (20:1)

[ 5]

2-[2-{4-(2,2- (4-

1- 4-(2,2- (4- ) ) 5g(14.9mmol), 2- 4- 2.6g (19.0mmol), (II)  
 0.2g (0.8mmol), - o - 2.3g (7.5mmol) 50mL , 10mL N,N'  
 L N,N'- 20mL 가 . 200mL 가 가 . 30 90  
 , : (20:1)

1

1 5

[ ]

[ 1]

ITO가 (Alq3; 40nm), 1 (Li<sub>2</sub>O; 25nm) (CuPc) 30nm NPD[N,N-di(naphthalen-1-yl)-N,N'-diphenylbenzidine] 50 n 30 nm (Mg/Ag; 100nm) 가 가 , 7V 40  
 0 cd/m<sup>2</sup> , 489 nm , 0.53 lm/W  
 [ 2 ]

1 , 5 (X S , R<sub>1</sub> R<sub>4</sub> H )

ITO가 ( ) 5 (X S , R<sub>1</sub> R<sub>4</sub> H ) ( ) 1.0 30 nm (Mg/Ag; 100 nm) (Alq3; 40nm), (Li<sub>2</sub>O; 25nm) 가 가 , 6.7V  
 660 cd/m<sup>2</sup> , 494 nm , 0.76 lm/W  
 1 2 1

[ 1 ]

			가 (V)	(cd/m <sup>2</sup> )	(lm/W)	
1	1	-	7.0	400	0.53	489 nm
2	1	5	6.7	660	0.76	494 nm

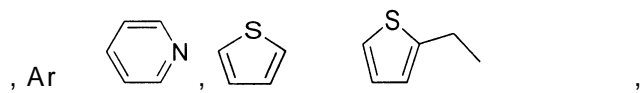
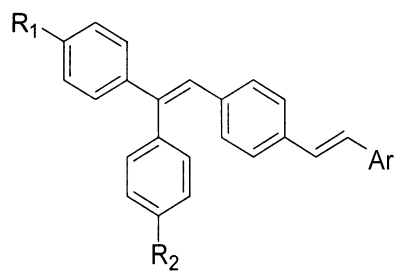
가 가 , 가

(57)

1.

1

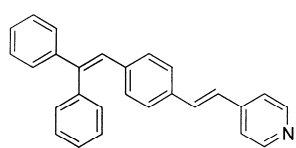
[ 1 ]



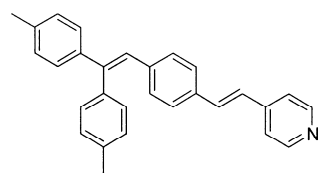
R<sub>1</sub> R<sub>2</sub> H, -CH<sub>3</sub> -C(CH<sub>3</sub>)<sub>3</sub> .

**2.**

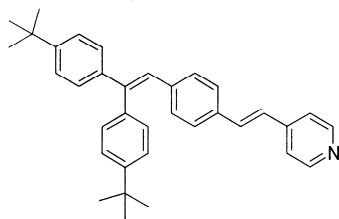
1 , 1 .



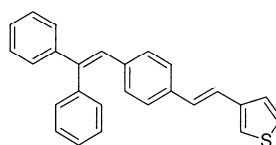
화1



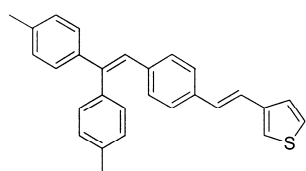
화2



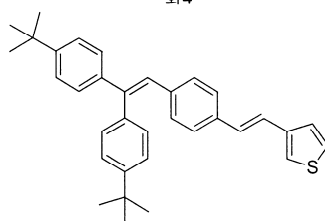
화3



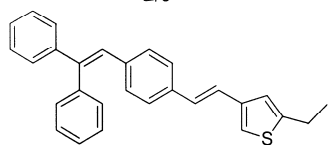
화4



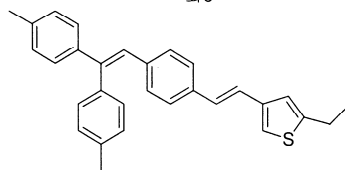
화5



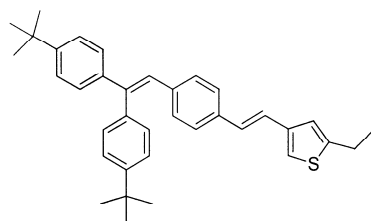
화6



화7



화8



화9

**3.**

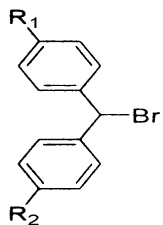
1) 2

3

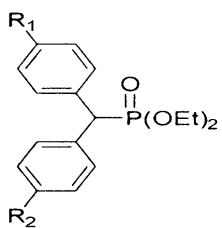
;

2) 1) 3 4- 4 1- -4-(  
 2,2- ) ;  
 3) 2) 4- , 4- 2- -4-  
 1 1 1 2

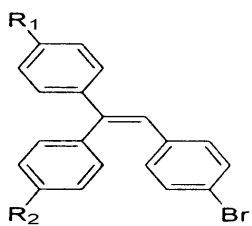
[ 2]



[ 3]



[ 4]



, R<sub>1</sub> R<sub>2</sub> 1 .

4.

1 ( ) 2 ( )  
 1 1 2  
 1

5.

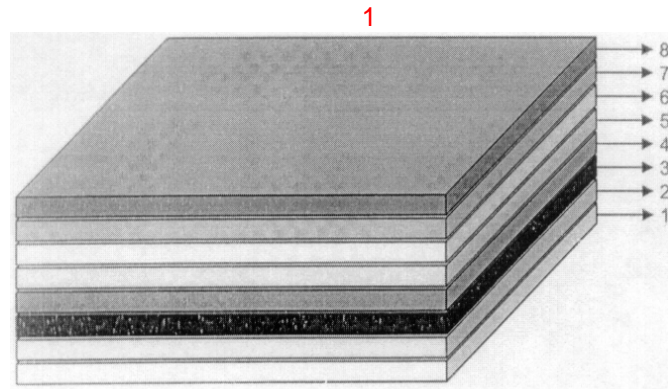
4 , , ,

6.

5 , 1 2

7.

5 , 1 2



专利名称(译)	用于有机电致发光器件的蓝色发光化合物，其制备方法以及使用其的有机电致发光器件		
公开(公告)号	<a href="#">KR1020040060275A</a>	公开(公告)日	2004-07-06
申请号	KR1020020086824	申请日	2002-12-30
申请(专利权)人(译)	LG电子公司		
当前申请(专利权)人(译)	LG电子公司		
[标]发明人	TAK YOONHEUNG 탁윤흥 HAN YOONSOO 한윤수 KIM KIDONG 김기동 KIM SANGDAE 김상대 KIM YONGKWAN 김용관		
发明人	탁윤흥 한윤수 김기동 김상대 김용관		
IPC分类号	C09K11/06 H01L51/00 H05B33/14		
CPC分类号	C09K11/06 H01L51/0068 H01L51/0067 H05B33/14 C09K2211/1007 C09K2211/1029 C09K2211/1092 H01L2251/308 Y10S428/917		
代理人(译)	赵熙研究 Choegyupal		
其他公开文献	KR100471367B1		
外部链接	<a href="#">Espacenet</a>		

摘要(译)

技术领域本发明涉及一种用于有机电致发光器件的蓝色发光化合物，其制备方法以及使用该化合物的有机电致发光器件，更具体地，通过制备以下式1的化合物，其中将杂环引入到蓝色发光材料中，与具有高分子量的蓝色发光化合物相比，被该化合物吸收和发射的光的波长范围是相同的，但是分子量很小，因此溶解度良好，可以提供一种易于重结晶和升华的高纯度材料。通过应用它，可以提供具有提高的发光效率同时保持现有的蓝色发光材料的共轭效应和热稳定性的装置。一级方程式 图1

