

(19)  
(12)

(KR)  
(A)

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

(11)  
(43)

10-2004-0060262  
2004 07 06

(21) 10-2002-0086808  
(22) 2002 12 30

(71) 20

(72) 106 1202

102 104

110 801

580 218 904

1 202 902

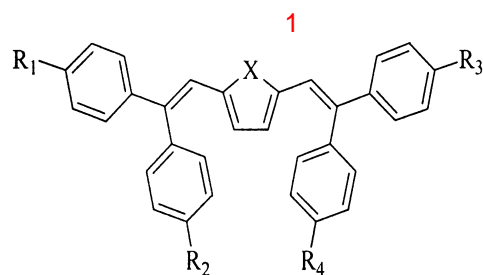
(74)

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(54)

,

가 가 , 1 가 ,



, R<sub>1</sub>, R<sub>2</sub>, R<sub>3</sub>, R<sub>4</sub> X

1

1

< >

1 : 2 :

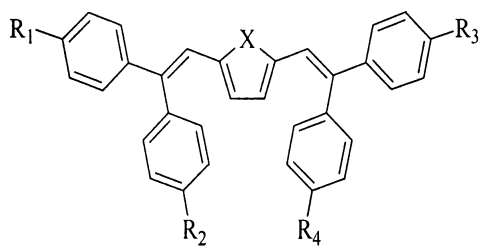
3 : 4 :

5 : 6 :

7 : 8 :

가, 가, 가, 가

[ 1 ]



, R<sub>1</sub>, R<sub>2</sub>, R<sub>3</sub>, R<sub>4</sub> X

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

가 -

가

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)  
20 50 nm Alq3 30 50 nm  
/ Alq3

2 ( ) .  
(full-color) , , 3가

Alq3 (ETL) Alq3 ,

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

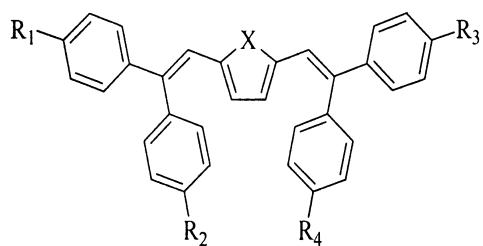
(Idemitsu: 出光興山) 가 가  
[H. Tokilin, H. Higashi, C. Hosokawa, EP 388, 768(1990)],  
가 [Pro. SPIE, 1910, 180(1993)].

가 , 가 .

1 ( ) 2 ( )  
1

1

[ 1 ]



, X O S ,

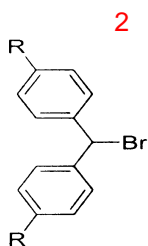
R<sub>1</sub>, R<sub>2</sub>, R<sub>3</sub> R<sub>4</sub> H, -CH<sub>3</sub> -C(CH<sub>3</sub>)<sub>3</sub>

1

1

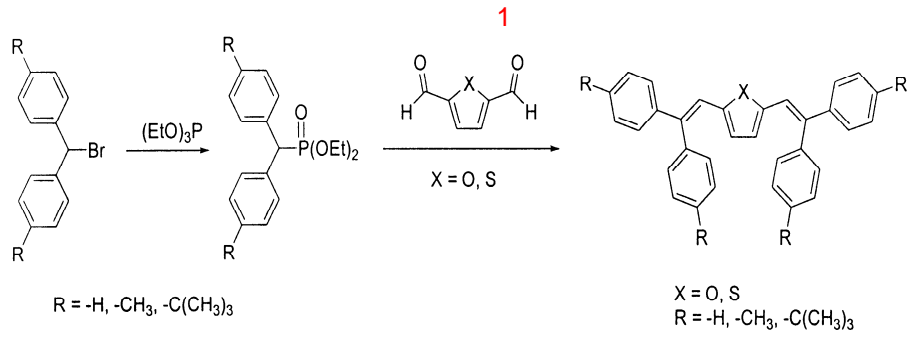
1) 2 ;

2) 2,5- 2,5-

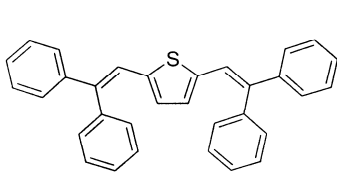


, R H, -CH<sub>3</sub> -C(CH<sub>3</sub>)<sub>3</sub>

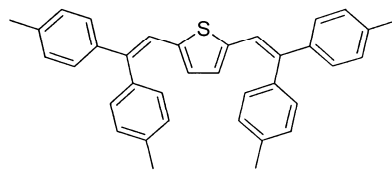
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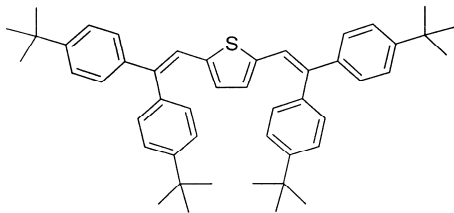
16 , 1 , 25 , 160 , 110 , 150 , 가  
 30 , 20 , 24 , , N,N'- , 가  
 1 2.5가 .  
 2 0 70 , 25 35 , 가 30 6 ,  
 ( 3 , , , ), 1,4- , 2 , t  
 -BuOK , , , ,  
 1 , ,



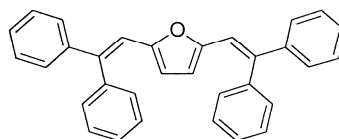
화1



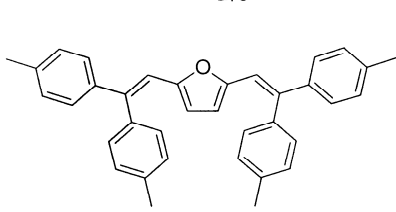
화2



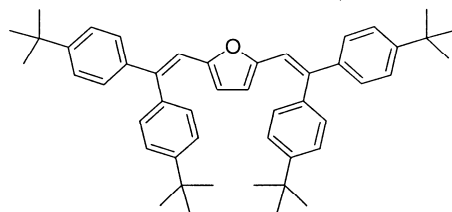
화3



화4



화5



화6

1 ( ) 1  
 1 ( ) 2 ( )



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)

(4)

(5),

(6)

(6)

(7)

(8)

(5)

1

(dopant)

(host)

1

(2)

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

(copper(II) phthalocyanine)

(4) NPD(N,N-di

(naphthalen-1-yl)-N,N'-diphenylbenzidine)

가 가

(5)

BAIq(Bis-(2-methyl-8-quinolinolato)-4-(phenyl-phenolato)-aluminium-(III))

, Alq3

(6)

(6)

2-(4- - )-5-(4-tert- )-1,3,4-

(Cs, Rb, K, Na, Li)

(Li<sub>2</sub>O)가

가

Mg/Ag, Al, Al/Li, Al/Nd

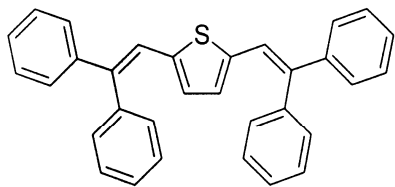
가

1

가

[ ]

[ 1 ]



2,5- (2,2- )

1)

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

10g(0.040mole),  
20mL 4  
8.6g ( : 70%)

2) 2,5- (2,2- )

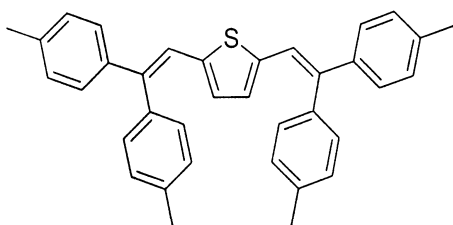
가 100mL  
0.8g (7mmole) 20mL  
mmole) t- 가 1  
50mL 100mL 가  
2g

4.4g(14mmole), 2,5-  
1.6g(15  
1.7g(3.86mmole, 54%)

<sup>1</sup> H-NMR : 6.6(s, 2H), 7.0(s, 2H), 7.1(dd, 4H), 7.2~7.3(m, 16H)

: 133

[ 2]



2,5- (2,2- )

1)

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

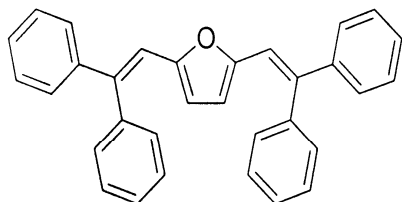
10g(0.036mole),  
20mL 4  
9g ( : 75%)

2) 2,5- (2,2- )

가 100mL  
0.8g (7mmole) 20mL  
g(15mmole) t- 가 1  
50mL 100mL 가  
2g

5g(15mmole), 2,5-  
1.6  
1.5g(3mmole, 43%)

[ 3]



2,5- (2,2- )

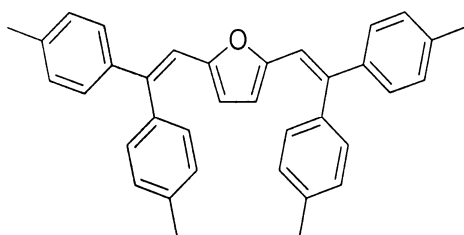
1)

가 100mL 17.3mL(0.101mole), 30ml , 110 24 10g(0.040mole), 20mL 4 8.6g ( : 70%)

2) 2,5- (2,2- )

가 100mL 0.8g (6.4mmole) 20mL 4.4g(14mmole), 2,5- 1.6g(15 mmole) t- 50mL 100mL 가 1 1.8g , 1.6g(3.8mmole, 59%)

[ 4]



2,5- (2,2- )

1)

가 100mL 17.3mL(0.101mole), 30ml , 110 24 10g(0.036mole), 20mL 4 9g ( : 75%)

2) 2,5- (2,2- )

가 100mL 0.8g (6.4mmole) 20mL 4.4g(14mmole), 2,5- 1.6 g(15mmole) t- 50mL 100mL 가 1 2.3g , 1.4g(3mmole, 45%)

1 1 4

[ ]

[ 1]

1, BAlq, ITO가, (CuPc) 30nm, NPD[N,N-di(naphthalen-1-yl)-N,N'-diphenylbenzidine] 5, 0 nm, BAlq( ) 1 (Alq3; 40nm), ( ) 1.0% (Li<sub>2</sub>O; 25nm) 30 nm (Mg/Ag100 nm), 3,900 cd/m<sup>2</sup>, 462 nm, 1.3 lm/W, 가, 가, 8.6V

[ 1 ]

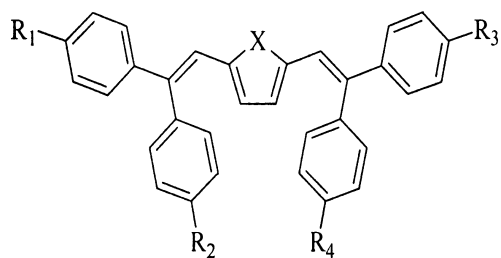
			가 (V)	(cd/m <sup>2</sup> )	(lm/W)	
1	BAlq	1	8.6	3,900	1.3	462 nm

가, 가, 가

(57)

1.

[ 1 ]

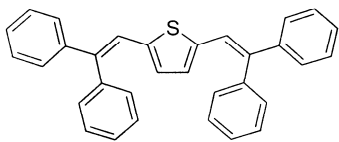


, X O S ,

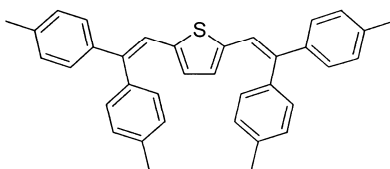
R<sub>1</sub>, R<sub>2</sub>, R<sub>3</sub> R<sub>4</sub> H, -CH<sub>3</sub> -C(CH<sub>3</sub>)<sub>3</sub>

2.

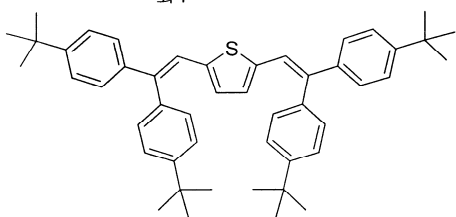
1, 1



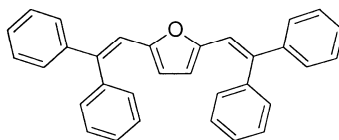
화1



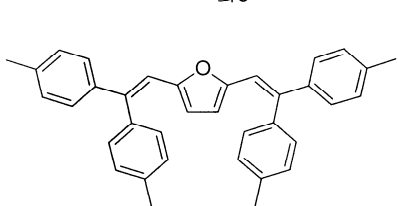
화2



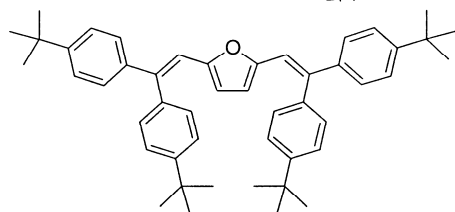
화3



화4



화5



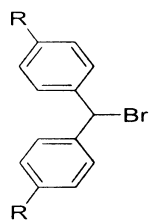
화6

3.

1) 2 ;

2) 2,5- 1 2 2,5- 1

[ 2 ]



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

4.

1 ( ) 2 ( )  
1 1 2

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5.

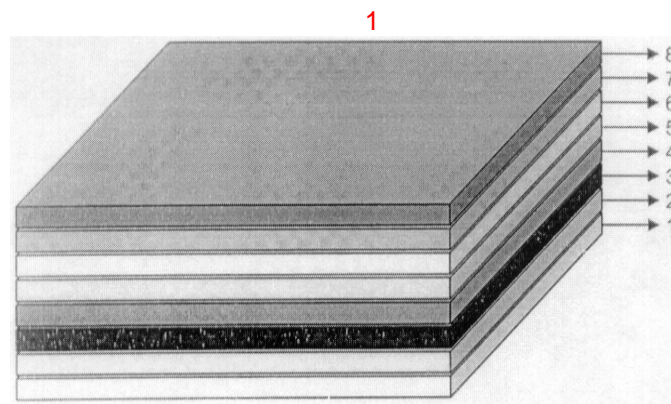
4 , , ,

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="#">KR1020040060262A</a>	公开(公告)日	2004-07-06
申请号	KR1020020086808	申请日	2002-12-30
申请(专利权)人(译)	LG电子公司		
[标]发明人	TAK YOONHEUNG 탁윤홍 HAN YOONSOO 한윤수 KIM KIDONG 김기동 KIM SANGDAE 김상대 KIM YONGKWAN 김용관		
发明人	탁윤홍 한윤수 김기동 김상대 김용관		
IPC分类号	C09K11/06		
CPC分类号	C09K11/06 H01L51/0065 C07D307/28 H01L51/5012 H05B33/14 C09K2211/1007 C09K2211/1088 Y10S428/917		
代理人(译)	赵熙研究 Choegyupal		
其他公开文献	KR100495036B1		
外部链接	<a href="#">Espacenet</a>		

摘要(译)

用途：本发明提供一种含有杂环的蓝色发光化合物，用于有机电致发光器件，解决了常规含苯基蓝色发光化合物的问题，如在溶剂中溶解度低，再结晶和升华难以限制用于有机电致发光器件的蓝光发光化合物由式1表示，其中X是O或S，并且R<sub>1</sub>，R<sub>2</sub>，R<sub>3</sub>和R<sub>4</sub>各自表示H，-CH<sub>3</sub>或-C(CH<sub>3</sub>)<sub>3</sub>。通过包括以下步骤的方法制备式1化合物：(1)使式2表示的溴二苯基甲烷衍生物与三乙氧基亚磷酸酯反应，得到二苯基乙氧基磷酰基甲烷衍生物；(2)使二苯基乙氧基磷酰基甲烷衍生物与2,5-噻吩二羧酐或2,5-咪唑二甲酐反应。©KIPO 2004

