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 (12) (A)

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 (43) 2002 10 18

(21) 10 - 2001 - 0018326
 (22) 2001 04 06

(71) 20

(72) 102 104

(74)

:

(54)

(phenothiazine) 가 () -

1

,

1

2

3

(organic electroluminescent device : OELD)

, 가 (exciton), 가 (excited state) (group)

() ()

, ITO(indium tin oxide, $In_2O_3 + SnO_2$)가
 (copper(II) Phthalocyanine) 10 30 nm , N,N - (- 1 -) - N,N' - (diphenylbenzidine) 30 60nm .
 , (host) (hydroxyquinolate)) (Alq3) , Alq3 (tris)(8-ethylquinacridone) 30 60nm N - (m 0 30nm , 30 50nm Alq3 2 AI/Li , .

가
가
(, ,)
,

(phenothiazine)

가 () -

(exciplex)

(band gap energy) 가

가 ()

가

가

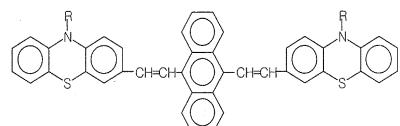
가

가

1

가 () -

()



R

가 1

20

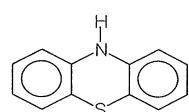
()

(Arbuzov)

(Homer - Emmons)

(1) 1

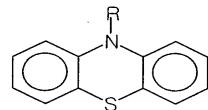
()



() (alkyl halide):

R - X

() :



R, , γ 1 20, X (F), (Cl), (Br),
(I), R 2 .

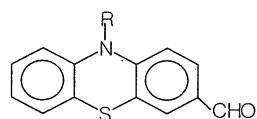
, (dimethyl sulfoxide), (dimethyl formamide),
가 . 가 .

, , , , , 가
가 .

1mole 1.5mole 2 mole

(2) 2

1 () (phosphoryl chloride) (di
methyl formamide) ():



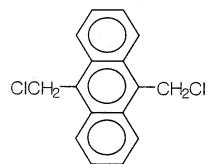
, 1,2 - (1,2 - dichloroethane)

() 1mole

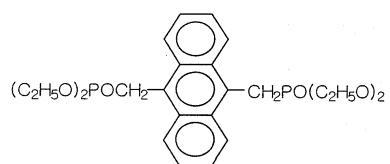
1 2mole

(3) 3

() (9,10 - () : 9,10 - bis(chloromethyl)anthracene):



(triethylphosphite) ():

2 ()
(phosphonate)

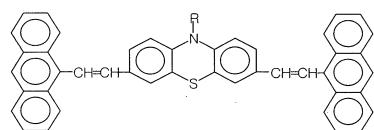
0	,	100	130	.	,	16
()	9,10 - ()	9,10 - ()	1mole	.	10	15mole

(4) 4

1 ()	3	()	()			
,	,	(tetrahydrofuran),	(toluene),	(benzene)		
, 1mole	4 7mole	,	,	,	()	()

2

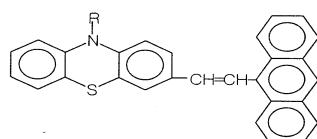
()	가	() -	
()			



, R , 가 1 20 (Arbuzov) ()
 () 가 . (Honer - Emmons)
 () 8 2 10mole
 () 3 () 9- 1mole
 , ()

3

가 () -
 ()



, R , () 가 1 20 (Arbuzov) ()
 () () 3 () 9-
 , () ()
 (exciplex)

가 () () 가 . ,
 ,

4

(petroleum ether) = 2 : 1) 20.5g () N - (82%).

300ml 3 1,2 - (1,2 - dichloroethane) 30ml 가 (1) () N
- 12.46g . , 8.7g
17.5g 12 가 , 33 %
4 () : = 2 : 1) 10.2g
() N - - 3 - (69%).

(3) 9,10 - () (9,10 - Bis(diethoxyphosphorylmethyl)anthracene)

300ml 3 () 9,10 - () 10g 117g (t
 riethylphosphite) 120 12 .
 , 9,10 - () 27g ()
) 9,10 - () (80.6%).

(4) ()

250ml 3
8g () 9,10- () 14.8g
0 7 .
60ml 가 , () N - - 3 -
) 10.4g 가
40ml ,
() 4.6g .

(5)

ITO 30nm
 N,N - (- 1 -) - N,N' - 50nm
 (4) () 30nm Li₂O 25nm Al
 q3 40nm .
 Mg, Ag 100nm .
 .
 ITO (+), Mg, Ag (-) 1700cd/m²,
 가 , 3 (λ_{max}) 612nm

2

1

()

,

1

가

, 1000 cd/m²

(Photoresearch)

PR - 650

6.4 lm/W

1

3

()

()

가

1

PR - 650

,

()

, 1600 cd/m²,

7.8

lm/W,

()

, 1530 cd/m²,

7.7 lm/W

(λ_{max}) 607nm

4

()

Alq3

3

,

1

(λ)

max) 612nm)

,

1750cd/m²,

8.8 lm/W

(57)

1.

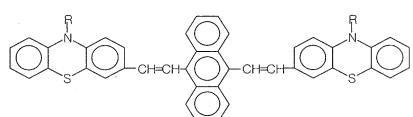
가 () -

2.

1

,

():

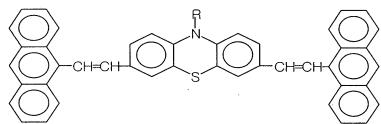


, R , 가 1 20

3.

1

():

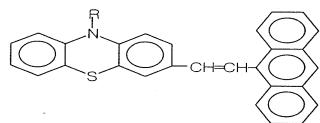


, R , 가 1 20

4.

1

():



, R , 가 1 20

5.

, , , 가 () - ,

6.

5

,

(8 -) (Alq3) 가

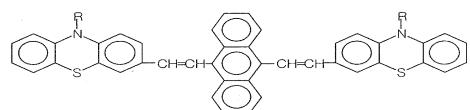
7.

5

6

,

():

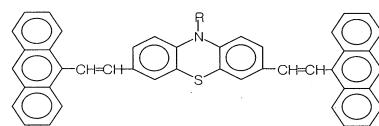


, R , 가 1 20

8.

5 6 ,

():

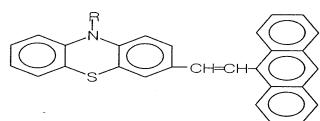


, R , 가 1 20

9.

5 6 ,

():



, R , 가 1 20

10.

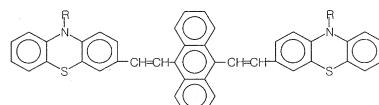
5 6 ,

가

11.

10 ,

():



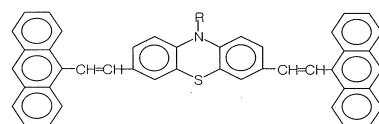
, R , 가 1 20

12.

10

,

():



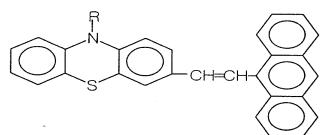
, R , 가 1 20

13.

10

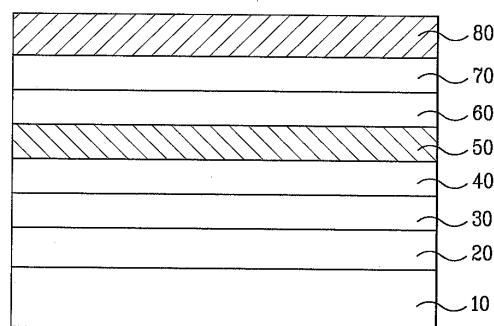
,

():

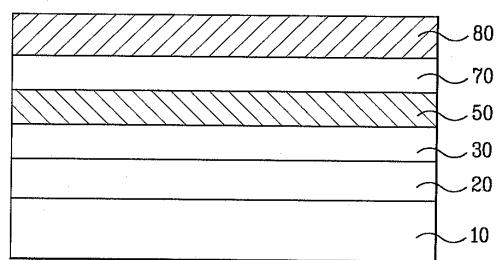


, R , 가 1 20

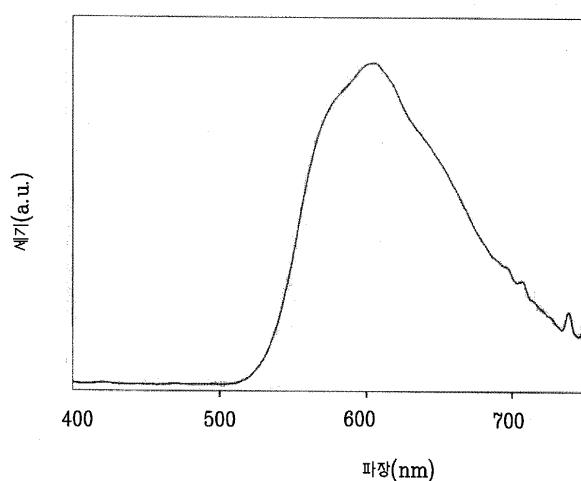
1



2



3



专利名称(译)	红色有机电致发光材料和使用其的有机电致发光器件		
公开(公告)号	KR1020020078264A	公开(公告)日	2002-10-18
申请号	KR1020010018326	申请日	2001-04-06
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	HAN YOONSOO 한윤수		
发明人	한윤수		
IPC分类号	C09K11/06		
CPC分类号	C09K11/06 C09K2211/1011 C09K2211/1037 H01L51/0071 H01L51/5012 H01L51/5072 H01L51/5092 H05B33/14 Y10S428/917		
代理人(译)	金勇 新昌		
其他公开文献	KR100662294B1		
外部链接	Espacenet		

摘要(译)

本发明涉及使用吩噻嗪，红色发光材料和其中蒽基以饼(π)-共轭物形式结合并形成的材料的有机电致发光器件，提供高有机电致发光器件效率和高亮度，空穴传输特性和电子传输特性优异，红光发射特性在电场下是优异的。发光材料和有机电致发光器件。

