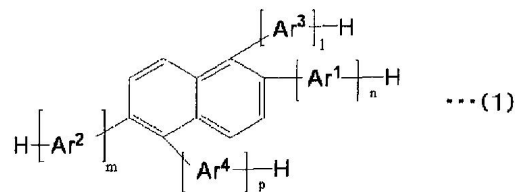


	(19) (12)	(KR) (A)	(11) (43)	10-2010-0042273 2010 04 23
(51)	Int. Cl.		(71)	
	C09K 11/06 (2006.01) H01L 51/50 (2006.01)			3 1 1
	C07C 15/20 (2006.01)			
(21)	10-2010-7002542		(72)	
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(87)	WO 2009/008199		()	
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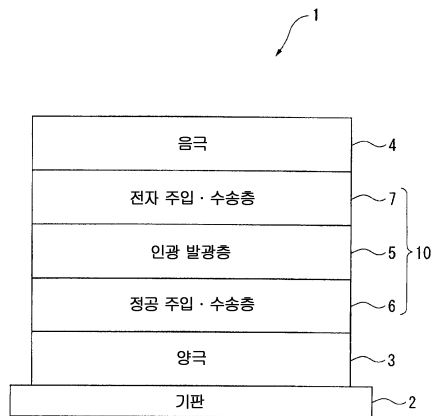
(54) ,

(57)

(1) .
[1]



(1) , Ar¹ Ar⁴ , , . n, m, l 1 5 .
6 18 . n, m, l p 2 , Ar¹ Ar⁴ ,
p 0 5 .
- 1



(72)

1280

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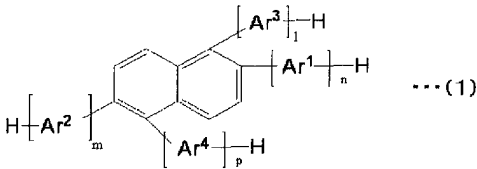
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(1)

[1]

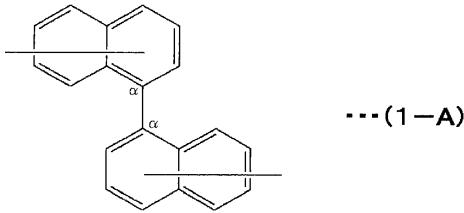


(1) , Ar¹ Ar⁴ , ,
6 18 .

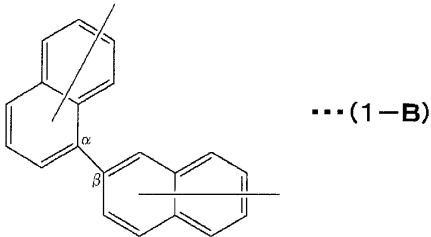
n, m, l 1 5 . p 0 5 .

(1-A), (1-B), (1-C) (1-D) .

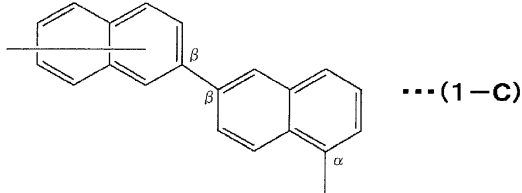
[2]



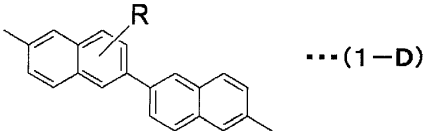
[3]



[4]



[5]



(1-A), (1-B) (1-C) ,
.
(1-D) , R , 1 , 2
R ,
, 3 ,
4 , 3
.
, 4 ,
4 .
, 9- , 9- 3
.
, Ar¹ Ar⁴ , 1 .
2
1 ,
(1) , Ar¹ Ar⁴ , , , , , ,
.
3
2 ,
(1) , Ar¹ Ar⁴ ,
6 30 , 1 30 , 1 30 , 1
20 , , 3 30 .
4
1 3 ,
(1) ,
n, m, l 1 3 ,
p 0 3 .
5
1 4 EL .
6
5 ,
EL .
7
5 6 ,
EL .
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, 1 ,

1 1 3

EL .

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9 ,

EL .

11

10 ,

Ir, Os, Pt, Au, Cu, Re Ru EL

12

10 11 ,

520 700 EL .

13

8 12 ,

EL .

14

8 12 ,

EL .

[0001] , EL EL .

[0002] , () (EL) .

[0003] EL , , , ,

[0004] EL ,

[0005] , , ,

[0006] , , 1 7
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[0007] , , EL EL
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[0008] , , 3
.
[0009] 75 , 100 ,
EL .
[0010] EL , , ,
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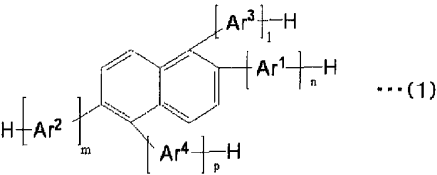
- [0011] (0001) JP2007-84485 A
(0002) JP2006-151966 A
(0003) JP2005-19219 A
(0004) JP2005-8588 A
(0005) JP2004-18510 A
(0006) WO 200746658 A
(0007) JP2003-142267 A

[0012] EL , EL
.

[0013] EL , (1) EL
.

[0014] (1) .

[0015] [1]



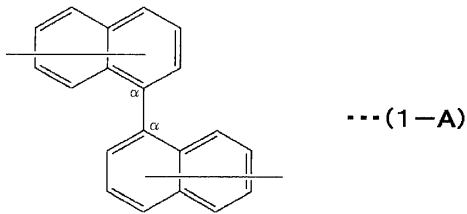
[0016]
[0017] (1) , Ar¹ Ar⁴ , , ,

6 18 .
[0018] n, m, l , 1 5 . p , 0 5 .

[0019] n, m, l p 2 , Ar¹ Ar⁴ , .

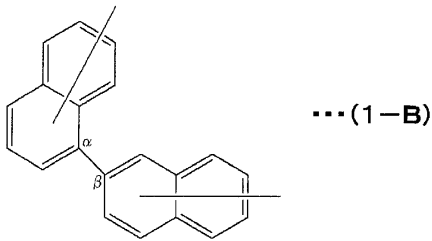
[0020] , 2 , ,
(1-A), (1-B), (1-C) (1-D) .

[0021] [2]



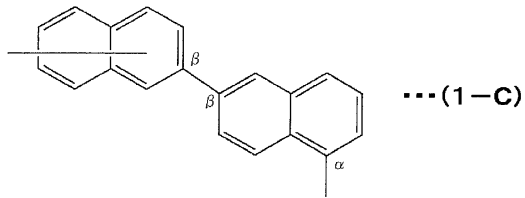
[0022]

[0023] [3]



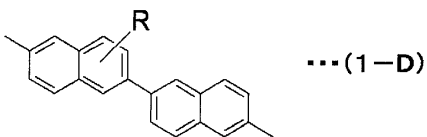
[0024]

[0025] [4]



[0026]

[0027] [5]



[0028]

[0029] (1-A), (1-B) (1-C) , .

[0030] (1-D) , R , 1 , 2 . R , .

[0031] , 3 , 4 , 3 .

[0032] , 4 , 4 .

[0033] , 9- , 9- 3 .

[0034] , Ar¹ Ar⁴ , 1 .

[0035] EL , (1) .

[0036] EL , , 1 , (1) .

[0037] , EL , EL .

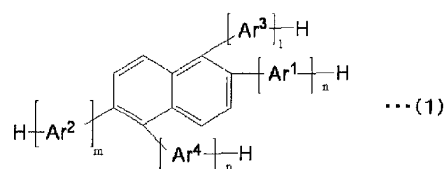
[0038] 1 EL .

[0039] , .

[0040] []

[0041] , (1) .

[0042] [6]



[0043]

[0044] (1) , Ar¹ Ar⁴ , , , .
6 18

[0045] n, m, l , 1 5 . p , 0 5 .

[0046] n 1 5 , (-[Ar¹]_n-H) , (1-n-1) (1-n-5) .

[0047] n 1 , -Ar^{1a}-H ... (1-n-1)

[0048] n 2 , -Ar^{1a}-Ar^{1b}-H ... (1-n-2)

[0049] n 3 , -Ar^{1a}-Ar^{1b}-Ar^{1c}-H ... (1-n-3)

[0050] n 4 , -Ar^{1a}-Ar^{1b}-Ar^{1c}-Ar^{1d}-H ... (1-n-4)

[0051] n 5 , -Ar^{1a}-Ar^{1b}-Ar^{1c}-Ar^{1d}-Ar^{1e}-H ... (1-n-5)

[0052] m 1 5 , (-[Ar²]_m-H) , (1-m-1) (1-m-5) .

[0053] m 1 , -Ar^{2a}-H ... (1-m-1)

[0054] m 2 , -Ar^{2a}-Ar^{2b}-H ... (1-m-2)

[0055] m 3 , -Ar^{2a}-Ar^{2b}-Ar^{2c}-H ... (1-m-3)

[0056] m 4 , -Ar^{2a}-Ar^{2b}-Ar^{2c}-Ar^{2d}-H ... (1-m-4)

[0057] m 5 , $-\text{Ar}^{2a}-\text{Ar}^{2b}-\text{Ar}^{2c}-\text{Ar}^{2d}-\text{Ar}^{2e}-\text{H}$... (1-m-5)

[0058] l 1 5 , $(-\text{[Ar}^3]_l-\text{H})$, (1-l-1) (1-l-5) .

[0059] l 1 , $-\text{Ar}^{3a}-\text{H}$... (1-l-1)

[0060] l 2 , $-\text{Ar}^{3a}-\text{Ar}^{3b}-\text{H}$... (1-l-2)

[0061] l 3 , $-\text{Ar}^{3a}-\text{Ar}^{3b}-\text{Ar}^{3c}-\text{H}$... (1-l-3)

[0062] l 4 , $-\text{Ar}^{3a}-\text{Ar}^{3b}-\text{Ar}^{3c}-\text{Ar}^{3d}-\text{H}$... (1-l-4)

[0063] l 5 , $-\text{Ar}^{3a}-\text{Ar}^{3b}-\text{Ar}^{3c}-\text{Ar}^{3d}-\text{Ar}^{3e}-\text{H}$... (1-l-5)

[0064] p 1 5 , $(-\text{[Ar}^4]_p-\text{H})$, (1-p-1) (1-p-5) .

[0065] p 1 , $-\text{Ar}^{4a}-\text{H}$... (1-p-1)

[0066] p 2 , $-\text{Ar}^{4a}-\text{Ar}^{4b}-\text{H}$... (1-p-2)

[0067] p 3 , $-\text{Ar}^{4a}-\text{Ar}^{4b}-\text{Ar}^{4c}-\text{H}$... (1-p-3)

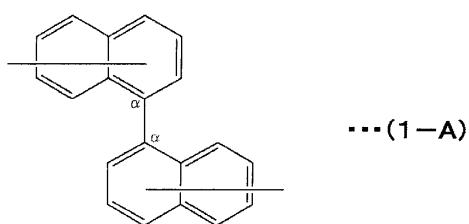
[0068] p 4 , $-\text{Ar}^{4a}-\text{Ar}^{4b}-\text{Ar}^{4c}-\text{Ar}^{4d}-\text{H}$... (1-p-4)

[0069] p 5 , $-\text{Ar}^{4a}-\text{Ar}^{4b}-\text{Ar}^{4c}-\text{Ar}^{4d}-\text{Ar}^{4e}-\text{H}$... (1-p-5)

[0070] (1-n-1) (1-n-5) , Ar^{1a} , Ar^{1b} , Ar^{1c} , Ar^{1d} , Ar^{1e} , (1-m-1) (1-m-5) , Ar^{2a} , Ar^{2b} , Ar^{2c} , Ar^{2d} , Ar^{2e} , (1-l-1) (1-l-5) , Ar^{3a} , Ar^{3b} , Ar^{3c} , Ar^{3d} , Ar^{3e} , (1-p-1) (1-p-5) , Ar^{4a} , Ar^{4b} , Ar^{4c} , Ar^{4d} , Ar^{4e} , .

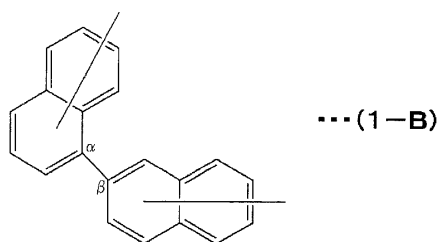
[0071] , ² , , (1-A), (1-B), (1-C) (1-D) .

[0072] [7]



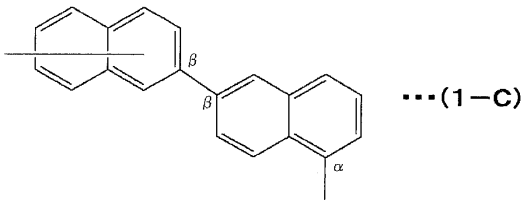
[0073]

[0074] [8]



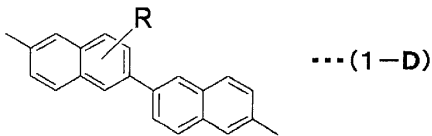
[0075]

[0076] [9]



[0077]

[0078] [10]



[0079]

[0080] (1-A), (1-B) (1-C) ,
.

[0081] (1-D) , R , 1 , 2
. R , .

[0082] , 3 , 3
4 ,

[0083] , 4 ,
4 .

[0084] , 9- , 9- 3
.

[0085] , Ar¹ Ar⁴ , 1 .

[0086] " " " ,
" " (,)
.

[0087] , , , 3
 , EL Ar¹ Ar² .

[0088] , Ar¹ Ar² 18 , 3 , EL
.

[0089] m, n 4 , , m, n 1 4 .

[0090] β 2 ,
 , .

[0091] , ,

[0092] (1) α - ,

[0093] (2) ,

[0094] (3) ,

[0095] , .

[0096] , , 2 , ,
(1-A), (1-B) (1-C) , α ,
.
[0097] , 2 β , (1-D) R
 , R .
[0098] , 3 ,
 4 ,
 3 , .
[0099] 4 , 4
 , .
[0100] , ,
 EL .
[0101] , 9- , 9- 3 ,
 .
[0102] , ,
 EL EL .
[0103] (1) , Ar¹ Ar⁴ , , , , , ,
 .
[0104] n, m, l p 2 , Ar¹ Ar⁴ , .
 , .
[0105] Ar¹ Ar⁴ , EL , 3
 .
[0106] , , ,
 , ,
 .
[0107] , ,
 , .
[0108] , ,
 .
[0109] (1) , Ar¹ Ar⁴ , 6 30 , 1 30
 , 3 30 , 1 20 , 3 30
 .
[0110] 6 30 , 1- , 2- , 1- , 2- , 3-
 , 4- , 9- , 2- , 3- , 4- , p- -4- , p- -3-
 , p- -2- , m- -4- , m- -3- , m- -2- , o- , m- , p- ,
 p-t- , p-(2-) , 3- -2- , 4- -1- , 4- -1- , 4' -
 , 4'' -t- -p- -4- .
[0111] , 1 30 , , , n- , s- ,
 , t- , n- , n- , n- , n- , 1- , 2-
 , 2- , 1,2- , 1,3- , 2,3-
 -t- , 1,2,3- , 1- , 2- , 2-
 , 1,2- , 1,3- , 2,3- -t- , 1,2,3- ,

, 1- , 2- , 2- , 1,2- , 1,3-
 , 2,3- -t- , 1,2,3- , , 1- , 2- , 2-
 , 1,2- , 1,3- , 2,3- -t- , 1,2,3-
 , , 1- , 2- , 2- , 1,2- , 1,3-
 , 2,3- -t- , 1,2,3- , , 1- , 2-
 , 2- , 1,2- , 1,3- , 2,3- -t- ,
 1,2,3- , , 1- , 2- , 2- , 1,2-
 , 1,3- , 2,3- -t- , 1,2,3- .

[0112]

3 30 , , , 3,5- .

[0113]

1 20 , -0Y , Y , , ,
 , n- , s- , , t- , n- , n- , n- , n- ,
 1- , 2- , 2- , 1,2- , 1,3-
 , 2,3- -t- , 1,2,3- , , 1- , 2-
 , 2- , 1,2- , 1,3- , 2,3- -t- ,
 1,2,3- , , 1- , 2- , 2- , 1,2-
 , 1,3- , 2,3- -t- , 1,2,3- , , 1-
 , 2- , 2- , 1,2- , 1,3- , 2,3-
 -t- , 1,2,3- , , 1- , 2- , 2- ,
 1,2- , 1,3- , 2,3- -t- , 1,2,3- ,
 , 1- , 2- , 2- , 1,2- , 1,3- ,
 2,3- -t- , 1,2,3- , , 1- , 2- , 2-
 , 1,2- , 1,3- , 2,3- -t- , 1,2,3- .

[0114]

3 30 , , , , ,
 , , , , , -t- , ,
 , , , -t- , .

[0115]

, , , , .

[0116]

(1-D) R , 1 30 , 6 30 ,
 1 20 , , 3 30 .
 , , , , , Ar¹ Ar⁴ .

[0117]

(1) , n, m, l , 1 3 , p , 0 3 .

[0118]

, (1) , n, m, l, p 3 , EL
 , . n, m, l, p 1 2 , .

[0119]

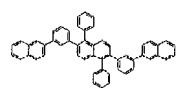
, 2 , (1-A), (1-B), (1-C)
 (1-D) , (1-B) (1-C) .

[0120]

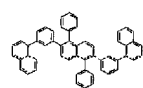
, .

[0121]

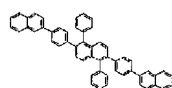
[11]



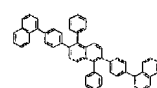
1-1



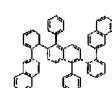
1-2



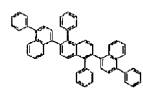
1-3



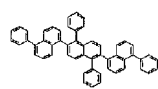
1-4



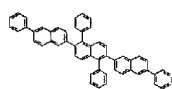
1-5



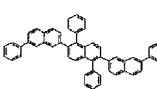
1-6



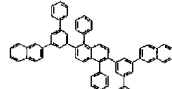
1-7



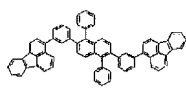
1-8



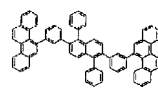
1-9



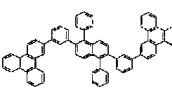
1-10



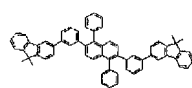
1-11



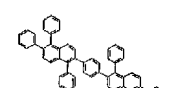
1-12



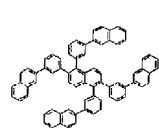
1-13



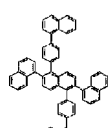
1-14



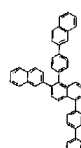
1-15



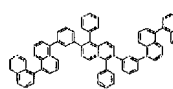
1-16



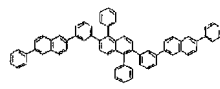
1-17



1-18



1-19

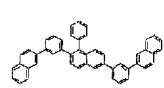


1-20

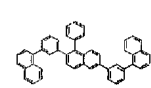
[0122]

[0123]

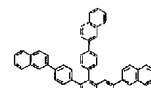
[12]



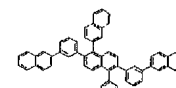
1-21



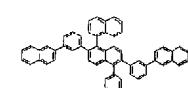
1-22



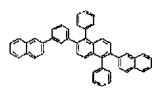
1-23



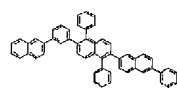
1-24



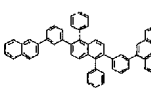
1-25



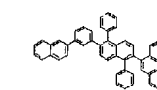
1-26



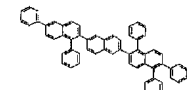
1-27



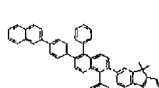
1-28



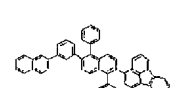
1-29



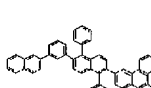
1-30



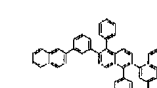
1-31



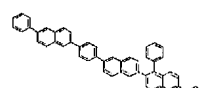
1-32



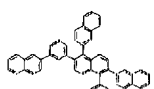
1-33



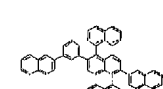
1-34



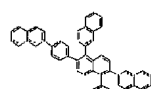
1-35



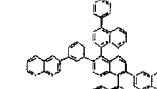
1-36



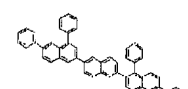
1-37



1-38



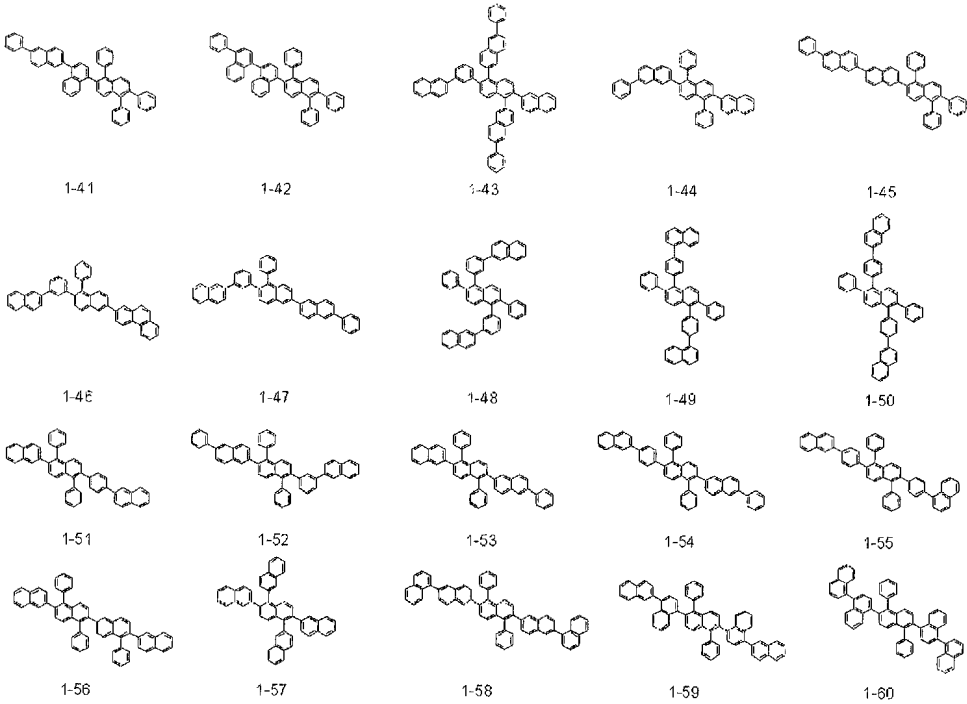
1-39



1-40

[0124]

[0125] [13]



[0126]

[0127] [EL]

[0128] , EL , (1) .

[0129] EL , .

[0130] (1) EL

, .

[0131] [EL]

[0132] , EL .

[0133] EL , 1 , EL .

[0134] EL , / ()/ / , / ()/ / ()/ , / ()/ .

[0135] 1 , EL .

[0136] EL (1) (2) , (3) , (4) , (3) (4) (10) .

[0137] (10) , (5) , (5) (3) , (6) , (5) (4) . (7)

[0138] , (5) (3) , (5) (4) .

[0139] , (5) , (5) .

[0140] , .

[0141]

EL

EL

EL

[0142]

, Ir, Pt, Os, Au, Cu, Re Ru

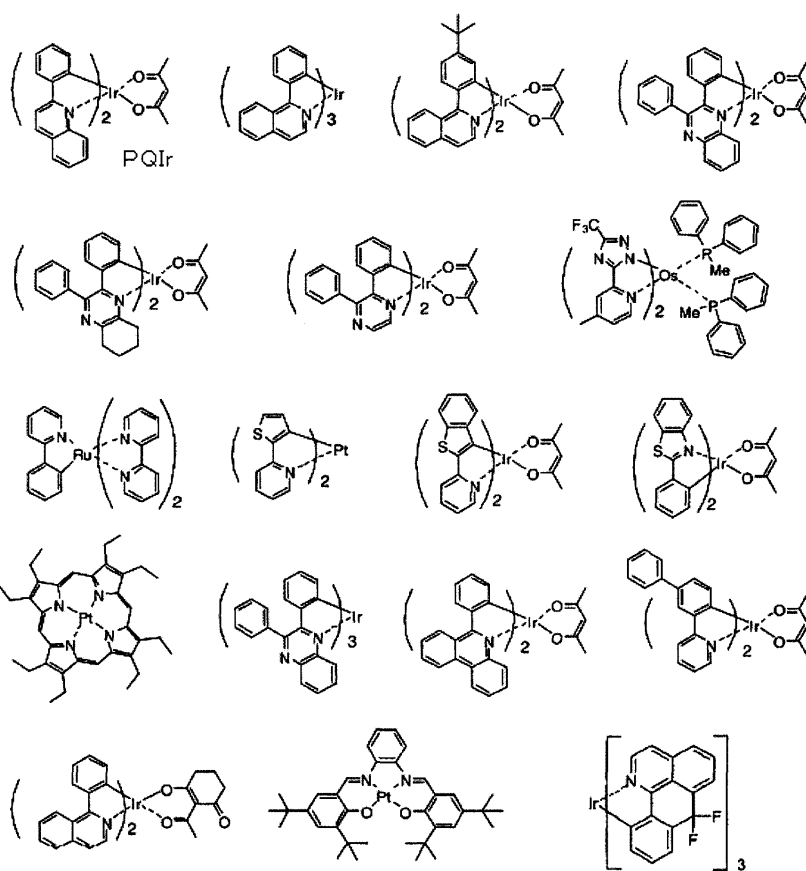
(Ir),

(Os)

(Pt)

[0143]

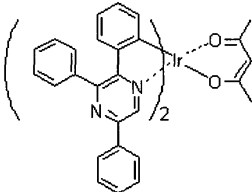
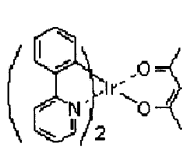
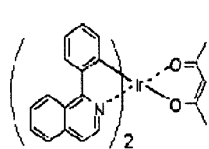
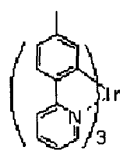
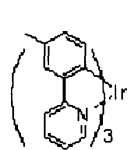
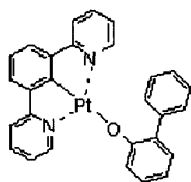
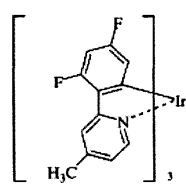
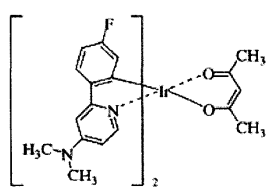
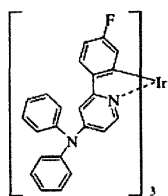
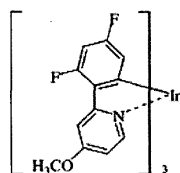
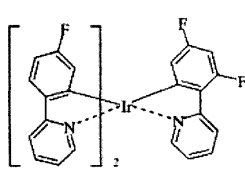
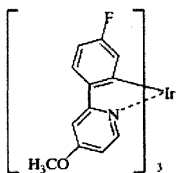
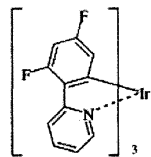
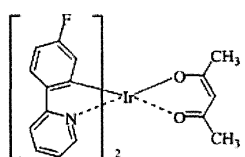
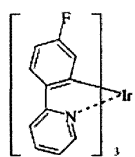
[14]



[0144]

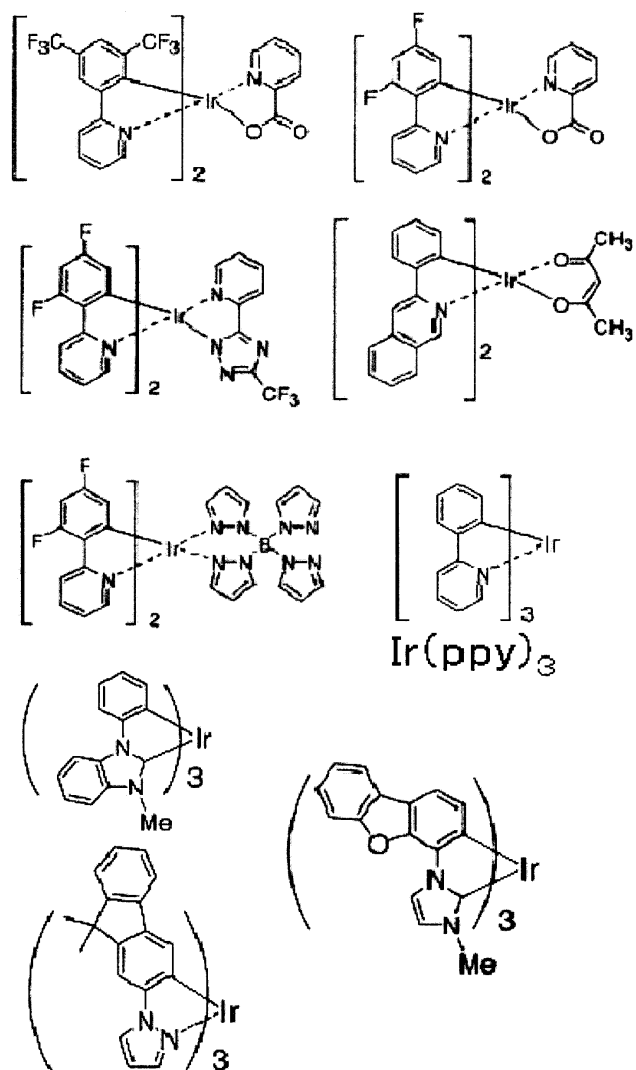
[0145]

[15]



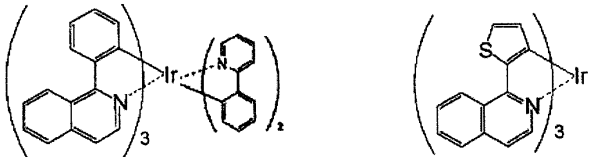
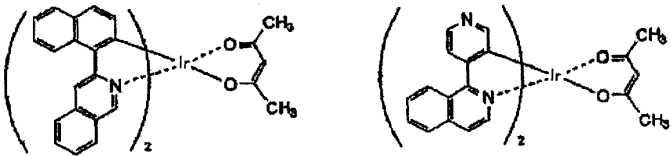
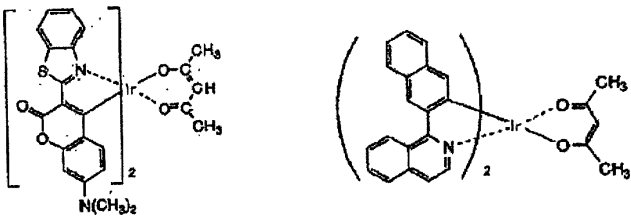
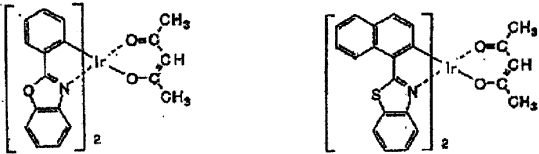
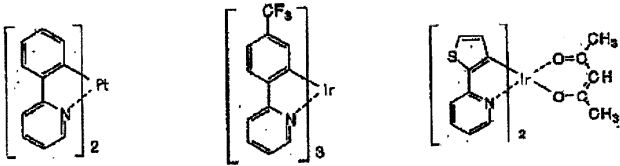
[0146]

[0147] [16]



[0148]

[0149] [17]



[0150]

[0151]

, EL , ,

[0152]

, 520 700 , , 590 700 .

[0153]

() , EL , EL .

[0154]

EL EL () , EL () EL , EL EL

[0155]

EL , .

[0156]

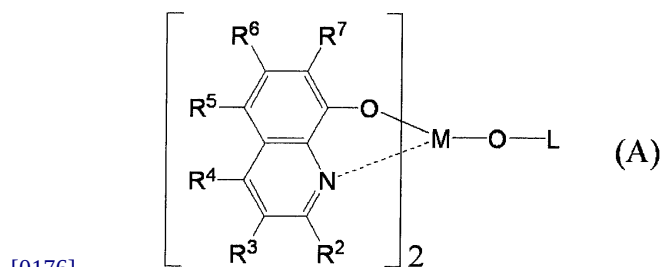
, EL .

[0157]

, , , , , 1

[0158]		, Na (: 2.36 eV), K (: 2.28 eV), Rb (: 2.16 eV), Cs (:	:
	1.95 eV)	,	2.9 eV
	Cs,	Rb Cs , Cs .	K, Rb,
[0159]		, Ca (: 2.9 eV), Sr (: 2.0 2.5 eV), Ba (: 2.52 eV)	
	,	2.9 eV	.
[0160]		, Sc, Y, Ce, Tb, Yb	, 2.9 eV
[0161]		,	,
	EL		.
[0162]		Li ₂ O, Cs ₂ O, K ₂ O	, LiF, NaF, CsF, KF
	,	LiF, Li ₂ O, NaF	.
[0163]		BaO, SrO, CaO	Ba _x Sr _{1-x} O (0 x 1), Ba _x Ca _{1-x} O (0 x 1)
	,	BaO, SrO, CaO	.
[0164]		YbF ₃ , ScF ₃ , ScO ₃ , Y ₂ O ₃ , Ce ₂ O ₃ , GdF ₃ , TbF ₃	, YbF ₃ , ScF ₃ , TbF ₃
			.
[0165]		,	,
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		,	, β -
		,	.
[0166]		()	.
		,	.
		,	.
		: 100 : 1 1 : 100,	5 : 1 1 : 5 .
[0167]		,	
		,	0.1 15
		.	.
[0168]		,	
		,	0.05 1
		.	.
[0169]		EL	:
	5 : 1 1 : 5	, 2 : 1 1 : 2	.
[0170]		EL	,
		,	,
		.	.
[0171]		50	.
		.	.
[0172]		,	.
		,	.
[0173]		,	1
		,	.
[0174]		,	(A)

[0175] [18]



R^2 R^7 , , , , , , 1 40 ,

, , , , , , .

, , , , , , .

1 40 , , , , , ,

, , , , , , , n- , s- , t- ,

n- , n- , n- , n- , n- , n- , n- , n- , n- , n- , n- , n-

, n- , n- , n- , n- , n- , , 1-

2- , 1- , 1- , 1- , 3- , , 1-

, 2- , 2- , 1,2- , 1,3-

2,3- -t- , 1,2,3- , , 1- , 2-

2- , 1,2- , 1,3- , 2,3- -t- , 1,2,3-

, , 1- , 2- , 2- , 1,2- , 1,3-

, 2,3- -t- , 1,2,3- , , 1- , 2-

, 2- , 1,2- , 1,3- , 2,3- -t- ,

1,2,3- , , 1- , 2- , 2- , 1,2-

, 1,3- , 2,3- -t- , 1,2,3- , , 1-

, 2- , 2- , 1,2- , 1,3- , 2,3-

-t- , 1,2,3- , , 1- , 2- , 1,2-

2,3- -t- , 1,2,3- .

, , , , , , n- , s- , t-

, n- , n- , n- , n- , n- , n- , n- , n- , n- , n-

n- , n- , n- , n- , n- , n- , , 1- , 1-

, 1- , 1- .

, , , 1- , 2- , 3- , 1,3- , 1-

, , 2,2- , 1,2- , 1- , 1,1- , 2- , 1-

, 2- , 3- , 3,3- , 1,2- , 1- -1- , 3- -1-

, , 2,2- , 1,2- .

, , , 3,5-

, , , 3,5-

-OY . Y ,

, .

, -2- , -3- , -4- , p- -4- , p-

-3- , p- -2- , m- -4- , m- -3- , m- -2- , o- , m- , p-

, p-t- , p-(2-) , 4' - , 4'' -t- -p- -4- , o-

, m- , p- , 2,3- , 3,4- , 2,5- , m- .

[0186]

[0187] , 1- , 2- .

[0188]

[0189]

[0190] , p- , m- , 0- , 1- , 2- , 1- , 2- .

[0191] , -0Y ' , Y ' , 1- , 2- , 1- , 2- ,
9- , 1- , 2- , 3- , 4- , 9- , 1- , 2- ,
 , 9- , 1- , 2- , 4- , 2- , 3- , 4- ,
p- -4- , p- -3- , p- -2- , m- -4- , m- -3- , m- -2- , 0-
 , m- , p- , p-t- , p-(2-) , 3- -2- ,
4- -1- , 4- -1- , 4 ' - , 4 '' -t- -p- -4- .

[0192]

, -0Z ' , Z ' 2- , 3- ,
2- , 3- , 4- , 2- , 3- , 4- , 5- , 6- , 7-
 , 1- , 3- , 4- , 5- , 6- ,
7- , 2- , 3- , 2- , 3- , 4- , 5- , 6-
 , 7- , 1- , 3- , 4- , 5- ,
 , 6- , 7- , 2- , 3- , 4- , 5- , 6- ,
7- , 8- , 1- , 3- , 4- , 5- , 6- ,
7- , 8- , 2- , 5- , 6- , 1- , 2-
 , 3- , 4- , 1- , 2- , 3- , 4- ,
 , 6- , 7- , 8- , 9- , 10- , 1-
 , 2- , 3- , 4- , 9- , 1,7- -2- , 1,7-
 -3- , 1,7- -4- , 1,7- -5- , 1,7- -6- , 1,7- -
8- , 1,7- -9- , 1,7- -10- , 1,8- -2- , 1,8- -3- ,
1,8- -4- , 1,8- -5- , 1,8- -6- , 1,8- -7- , 1,8-
 -9- , 1,8- -10- , 1,9- -2- , 1,9- -3- , 1,9- -4- ,
1,9- -5- , 1,9- -6- , 1,9- -7- , 1,9- -8- , 1,9-

-10- , 1,10- -2- , 1,10- -3- , 1,10- -4- , 1,10- -5-
 , 2,9- -1- , 2,9- -3- , 2,9- -4- , 2,9- -5- , 2,9-
 -6- , 2,9- -7- , 2,9- -8- , 2,9- -10- , 2,8- -1-
 , 2,8- -3- , 2,8- -4- , 2,8- -5- , 2,8- -6- , 2,8-
 -7- , 2,8- -9- , 2,8- -10- , 2,7- -1- , 2,7- -3-
 , 2,7- -4- , 2,7- -5- , 2,7- -6- , 2,7- -8- , 2,7-
 -9- , 2,7- -10- , 1- , 2- , 1- , 2- ,
 3- , 4- , 1- , 2- , 3- , 4- , 2- ,
 , 4- , 5- , 2- , 5- , 3- , 2- , 3-
 , 2- -1- , 2- -3- , 2- -4- , 2- -5- , 3- -1- ,
 3- -2- , 3- -4- , 3- -5- , 2-t- -4- , 3-(2-) -1-
 , 2- -1- , 4- -1- , 2- -3- , 4- -3- , 2-t- -1- , 4-
 t- -1- , 2-t- -3- , 4-t- -3- .

[0193] -COOY' , Y' .

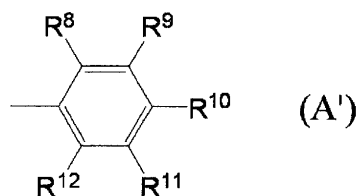
[0194] -NQ¹Q² . Q¹ Q² , Q¹ Q² .

[0195] -NAr¹Ar² , Ar¹ Ar² , Ar¹ Ar² .

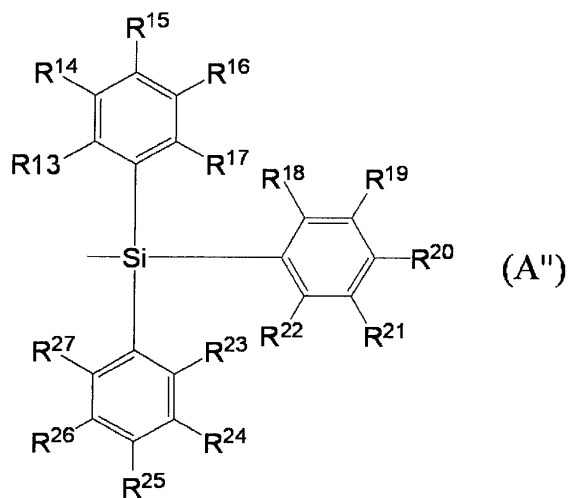
[0196] M , (Al), (Ga) (In) , In .

[0197] (A) L , (A') (A'') .

[0198] [19]



또는



[0199]

[0200] (, R⁸ R¹² , 1 40 , R¹³ R²⁷ ,

1 40 ,

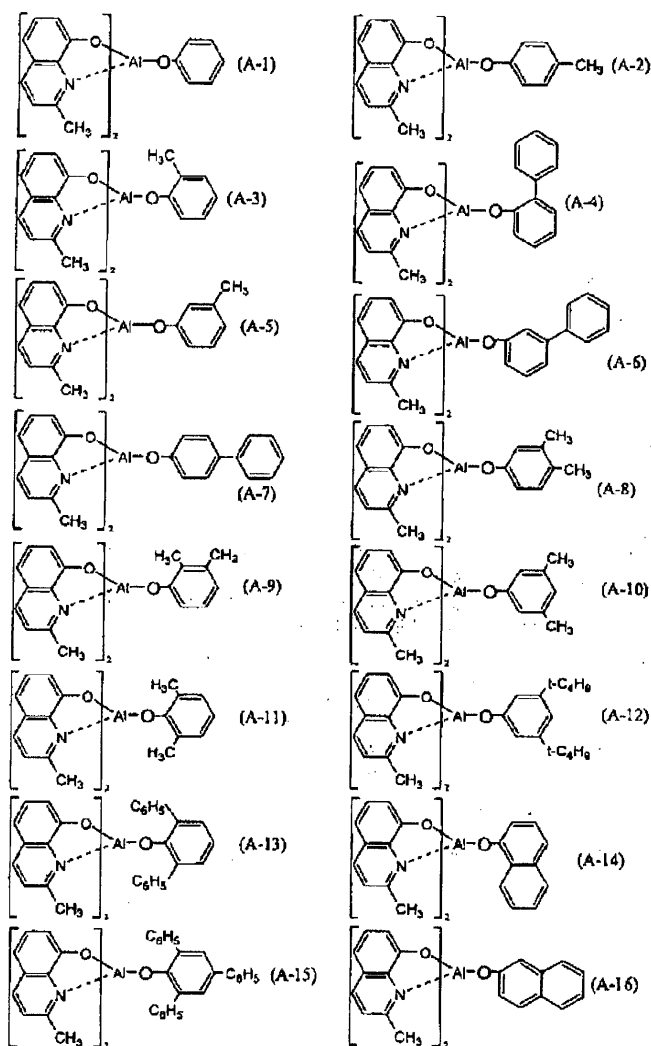
.)

[0201] (A') (A'') R^8 R^{12} R^{13} R^{27} 1 40 , R^2
 R^7

[0202] , R^8 R^{12} R^{13} R^{27} 2 ,
 , -2, 2' - , -3, 3' - , -4, 4' -

[0203] (A) ,

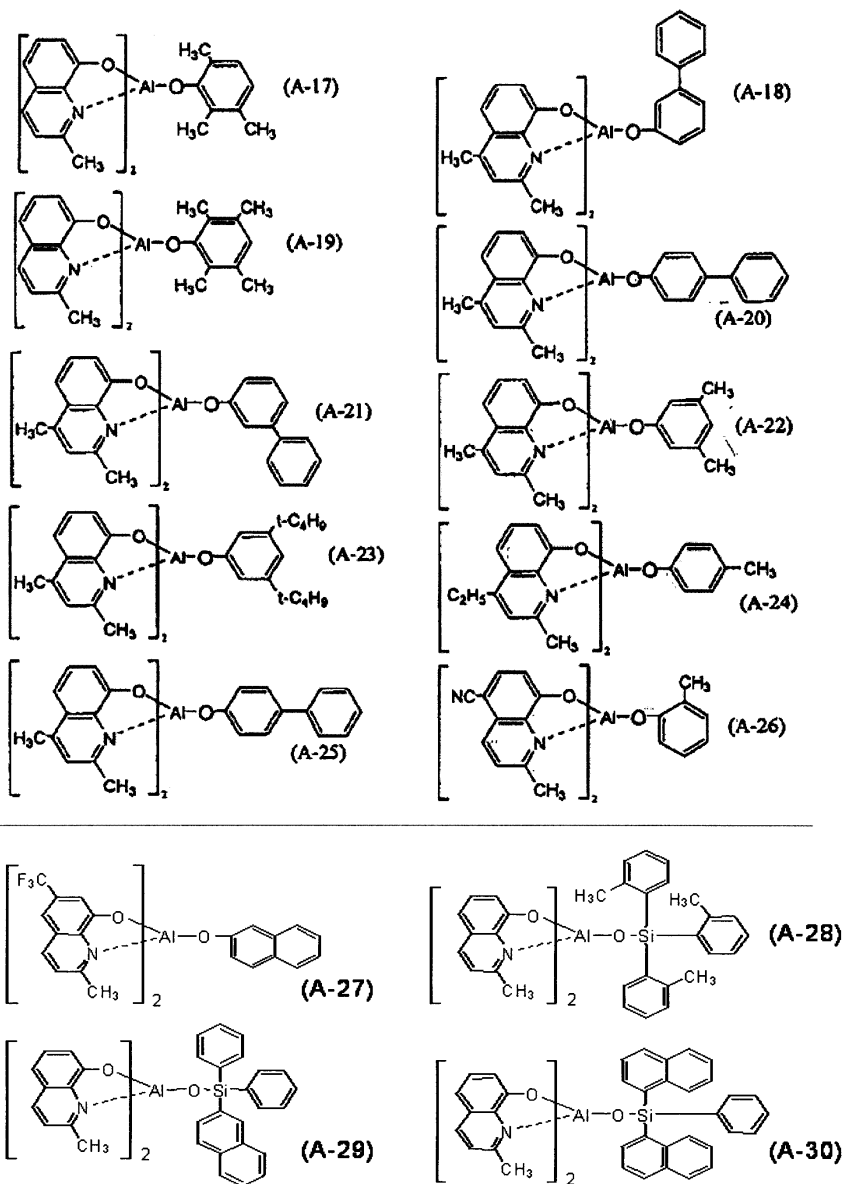
[0204] [20]



[0205]

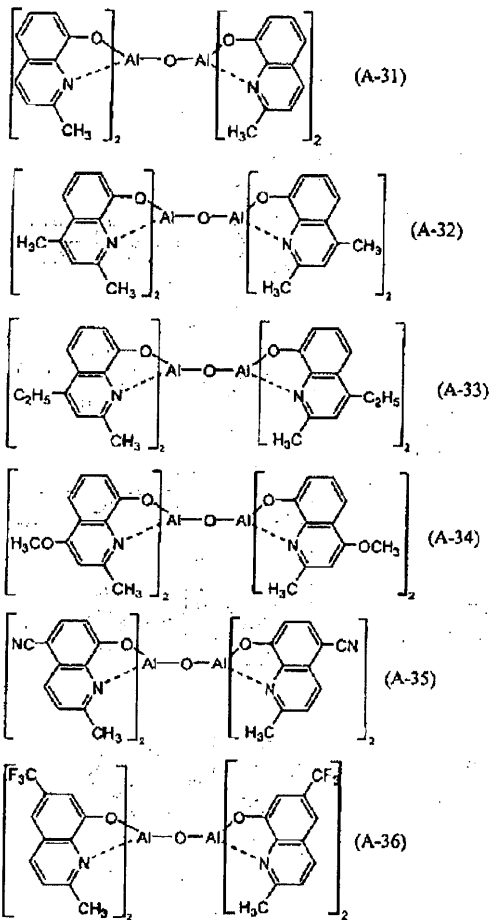
[0206]

[21]

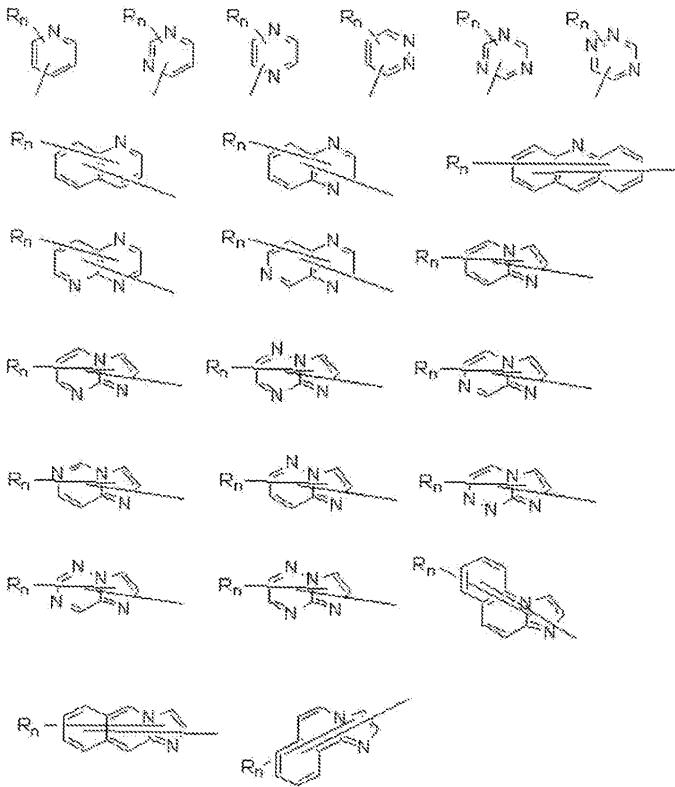


[0207]

[0208] [22]



[0226] [27]



[0227]

[0228] (, R , 6 40 , 3 40 , 1 20 , n 0 5 , n 2 , R .)

[0229]

[0230] [28]

[0231] HAr—L¹—Ar¹—Ar²

[0232] (, HAr , 3 40 , L¹ , 6 40 , 3 40 , Ar¹ , 6 40 2 , Ar² , 6 40 , 3 40 .)

[0233] HAr , , .

Chemical structures of 15 pyrimidine derivatives, numbered 1 through 15, are displayed in a grid. The structures are as follows:

- 1: 2-phenyl-4-phenylpyrimidine
- 2: 2-phenyl-4-(naphthalen-1-yl)pyrimidine
- 3: 2-phenyl-4-(naphthalen-2-yl)pyrimidine
- 4: 2-phenyl-4-(pyridin-2-yl)pyrimidine
- 5: 2-phenyl-4-(pyridin-3-yl)pyrimidine
- 6: 2-phenyl-4-(quinolin-2-yl)pyrimidine
- 7: 2-(pyridin-2-yl)-4-(pyridin-2-yl)pyrimidine
- 8: 2-phenyl-4-phenyl-1,3,5-triazine
- 9: 2-phenyl-4-methyl-1,3,5-triazine
- 10: 2,6-bis(methyl)-1,3,5-triazine
- 11: 2,6-bis(methyl)-1,3,5-triazine
- 12: 2,6-bis(methyl)-1,3,5-triazine
- 13: 2,6-bis(methyl)-1,3,5-triazine
- 14: 2,6-bis(methyl)-1,3,5-triazine
- 15: 2,6-bis(methyl)-1,3,5-triazine

[0236]

$$L^1 \quad / \quad / \quad /$$

[30]

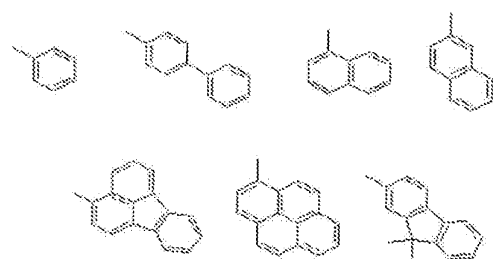


[0239]

 Ar^2

[0240]

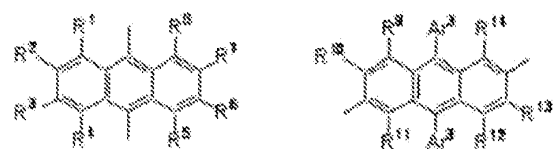
[31]



[0242]

$$\text{Ar}^1 \quad / \quad / \quad /$$

[32]



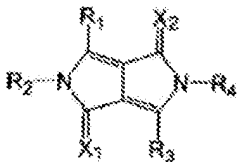
[0244]

[0245] (, R¹ R¹⁴ , , 1 20 , 1 20 , 6 40 , 6 40 3 40 , Ar³ , 6 40 3 40 .)

[0246] , Ar¹ , R¹ R⁸ , .

[0247] , (9-3448) .

[0248] [33]

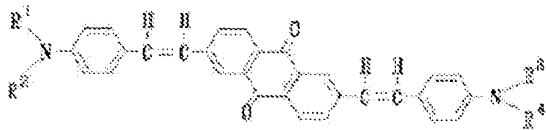


[0249]

[0250] (, R₁ R₄ , , , , X₁, X₂ , .)

[0251] , (2000-173774) .

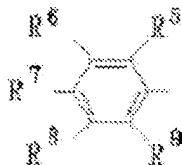
[0252] [34]



[0253]

[0254] (, R¹, R², R³ R⁴ , .)

[0255] [35]



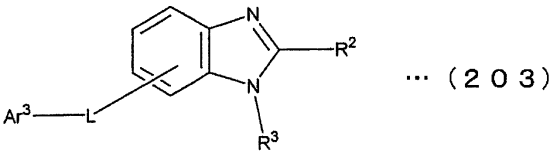
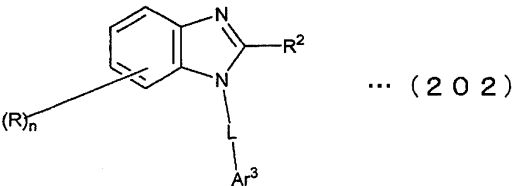
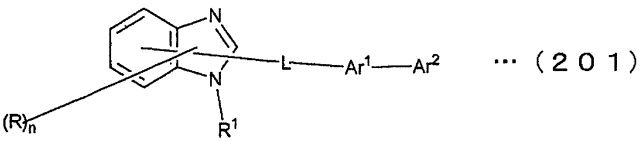
[0256]

[0257] (, R⁵, R⁶, R⁷, R⁸ R⁹ , , .)

[0258] , .

[0259] , (201) (203) .

[0260] [36]



[0261]

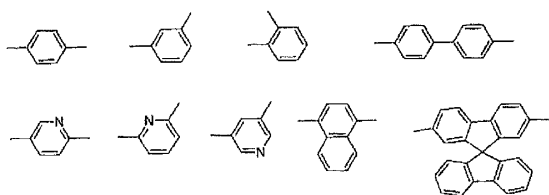
[0262] (201) (203) , R , , 6 60 , 1 20 , 1 20 , n 0 4 , R¹ , 6 60 , 1 20 1 20 , R² R³ , 6 60 , 1 20 , 1 20 , L , 6 60 , Ar¹ , 6 60 , Ar² , 6 60 , 1 20 1 20 .

[0263] Ar³ , 6 60 , 1 20 , 1 20 , -Ar¹-Ar² (Ar¹ Ar² ,) .

[0264] , (201) (203) , R , , 6 60 , 1 20 1 20 .

[0265] 6 60 , 6 40 , 6 20 , , t- , (2-) , , 9- 1 , 9-(1' -) 1 , 9-(2' -) 1 , 6- 1 , 9-[4-()] 1 , , , 9-(10-)

- [0266] , 9-[10-(1' -)] , 9-[10-(2' -)] .
- [0267] 1 20 , 1 6 , , , 3
- [0268] R , 1 20 , 1 20 6 40 3 40 .
- [0269] , , , .
- [0270] 1 20 , 1 20 , 6 40 , .
- [0271] 6 40 , , .
- [0272] 3 40 , , , , , , , , , .
- [0273] n 0 4 , 0 2 .
- [0274] (201) , R¹ , 6 60 , 1 20 1 20 .
- [0275] , , R .
- [0276] (202) (203) , R² R³ , 6 60 , 1 20 1 20 .
- [0277] , , R .
- [0278] (201) (203) , L , 6 60 , .
- [0279] 6 60 , 6 40 , 6 20 1 2 .
- [0280] , L ,
- [0281] [37]

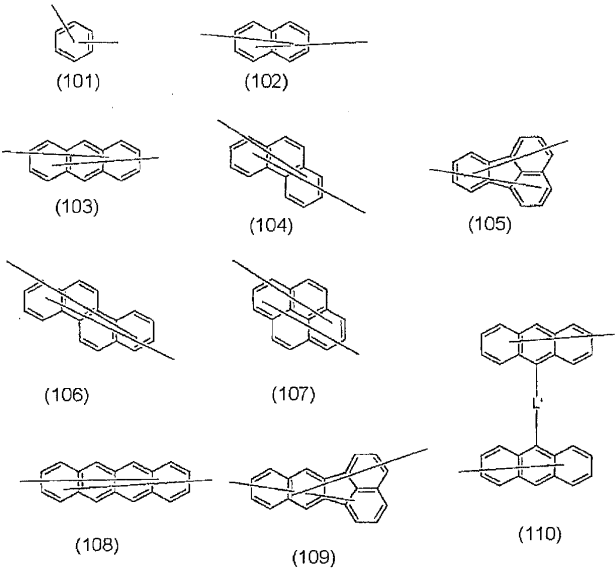


[0283]

[0284] (201) , Ar¹ , 6 60 ,
Ar¹ Ar³
R

[0285] , Ar¹ , (101) (110)

[0286] [38]

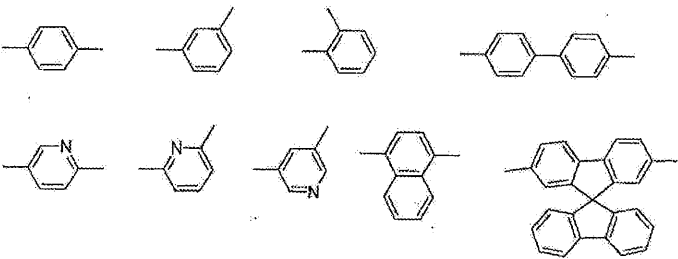


[0287]

[0288] (101) (110) , 1 20
6 40
3 40

[0289] (110) , L ' ,

[0290] [39]

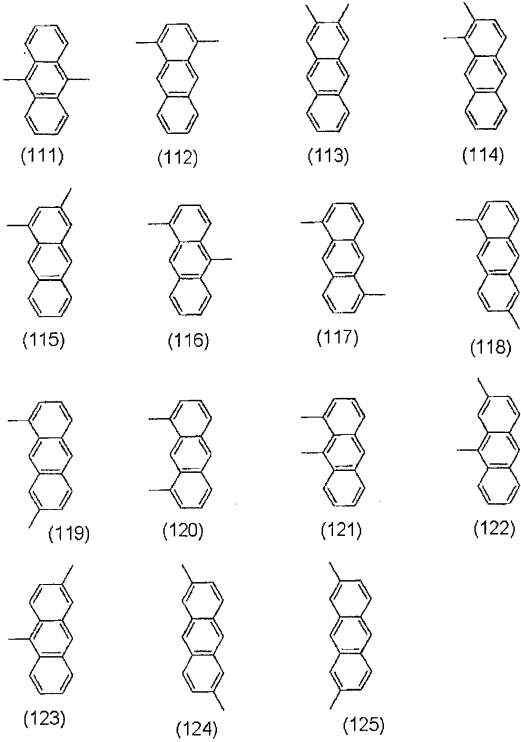


[0291]

[0292]

[0293] Ar¹ (103) , (111) (125)

[0294] [40]



[0295]

[0296] (111) (125) , 1 20 , 1 20 6 40 , 3 40 , .

[0297] (201) , Ar² , 6 60 , 1 20 , 1 20 .

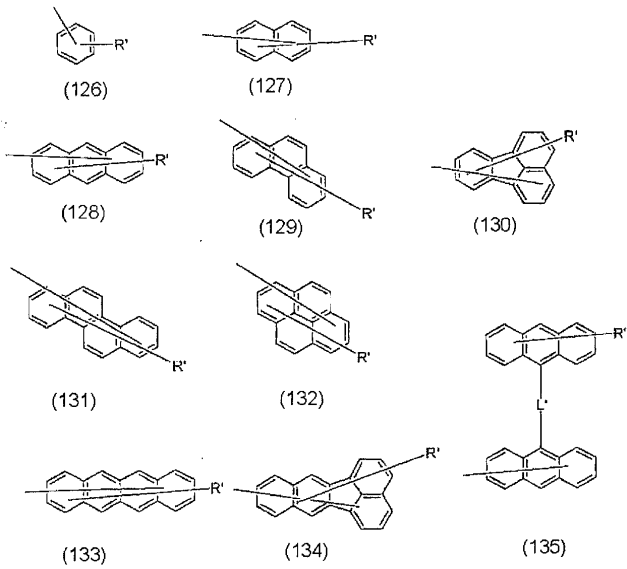
[0298] , , R .

[0299] (202) (203) , Ar³ , 6 60 , 1 20 , -Ar¹-Ar² (Ar¹ Ar² ,) .

[0300] , , R .

[0301] , Ar³ , (126) (135) .

[0302] [41]



[0303]

[0304]

(126) (135) , 1 20 , 6 40 , 3 40 , .

[0305]

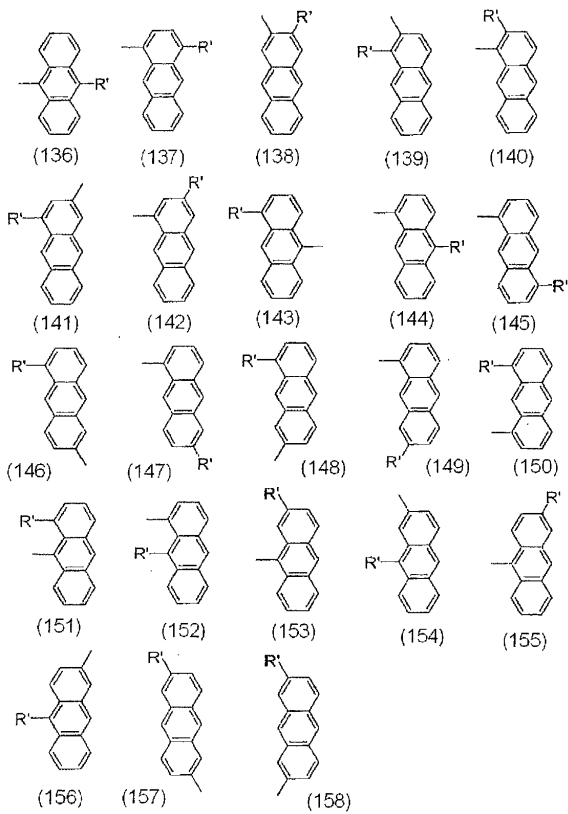
[0306]

(135) , L ' . 1 20 , 6 40 3 40 .

[0307]

Ar³ (128) , (136) (158) .

[0308] [42]

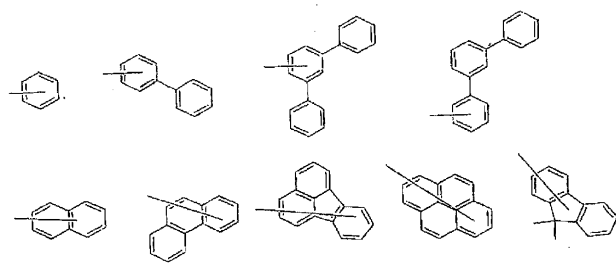


[0309]

[0310] (136) (158) , 1 20 , 1 20
6 40
3 40 ,
R ' , .

[0311] , Ar² Ar³ ,

[0312] [43]



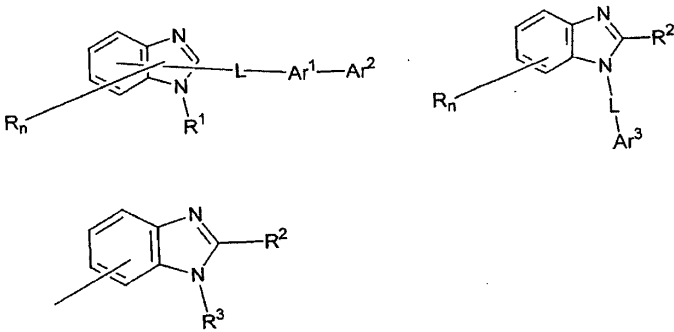
[0313]

[0314]

[0315] (201) (203) ,

[0316] , HAr , (201) (203) ,

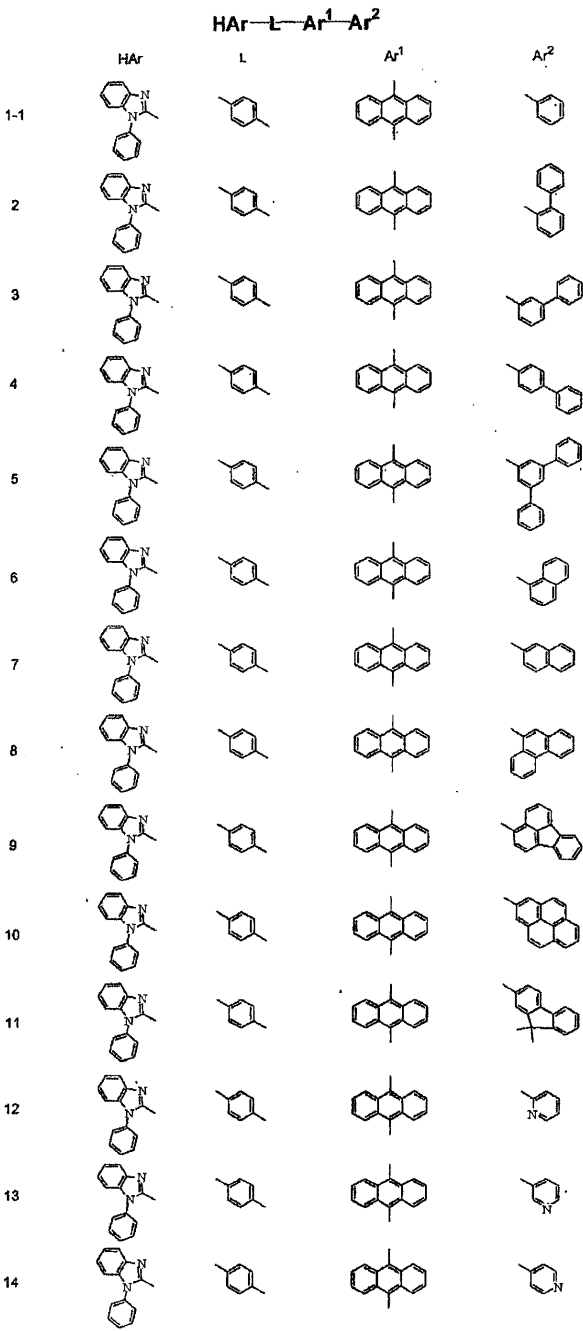
[0317] [44]



[0318]

[0319]

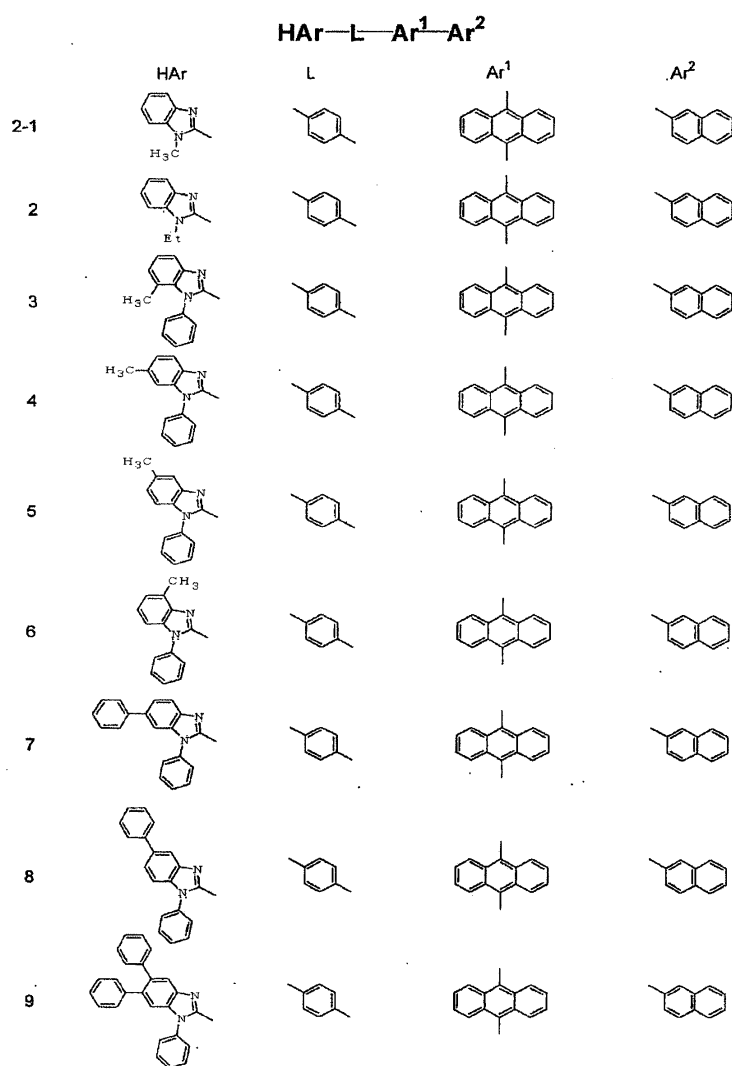
[0320] [45]



[0321]

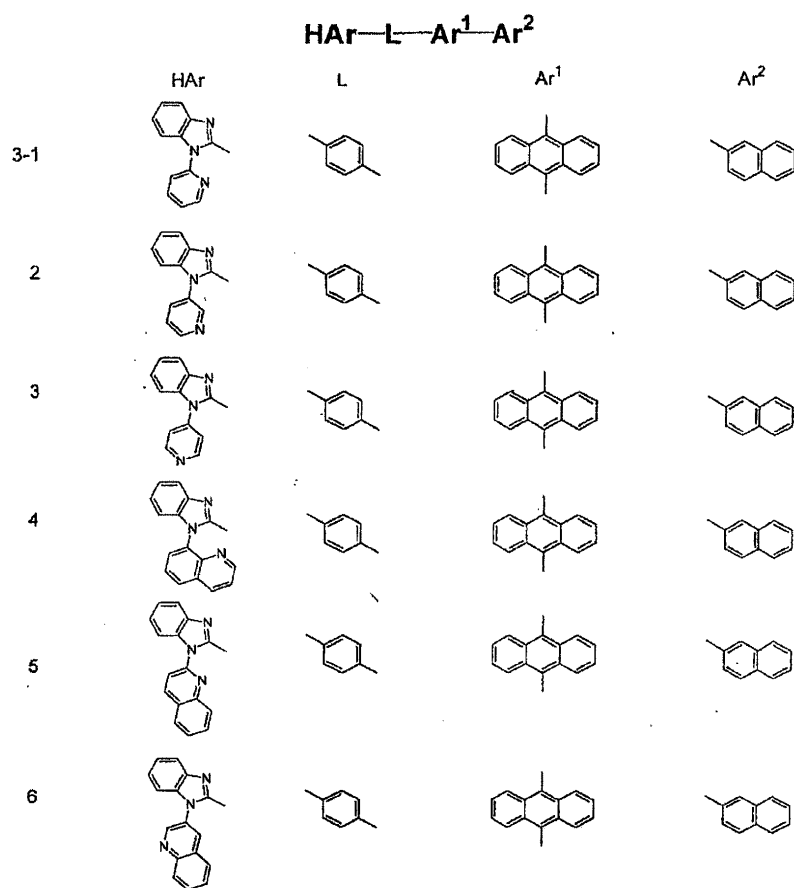
[0322]

[46]



[0323]

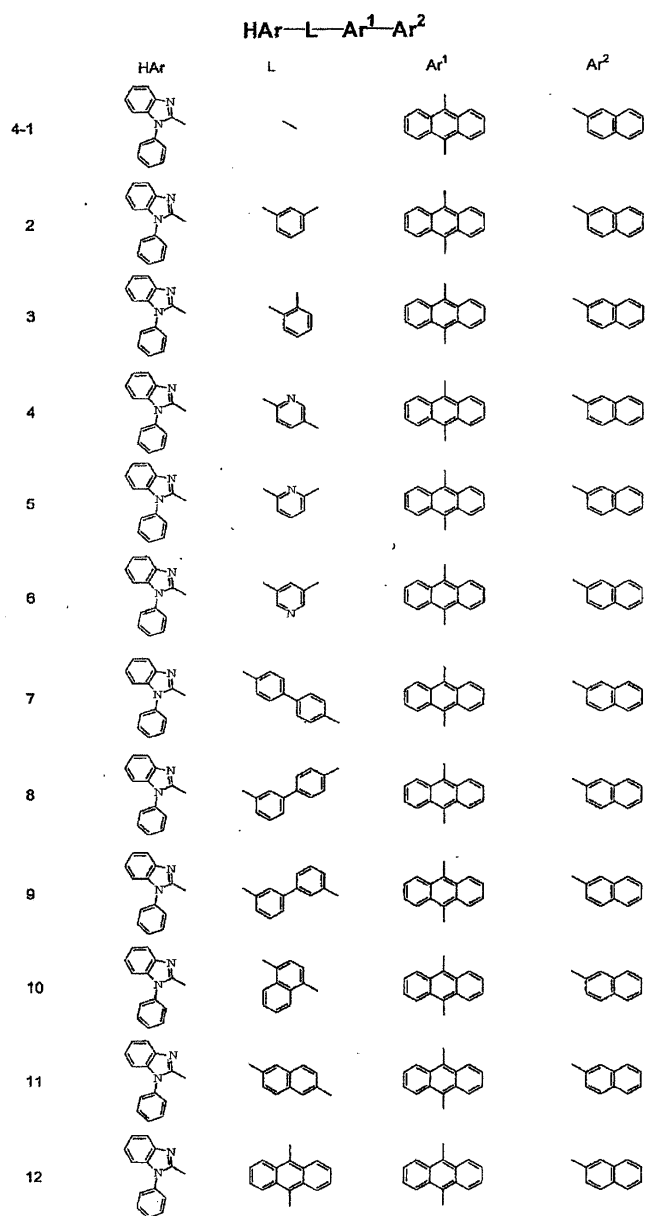
[0324] [47]



[0325]

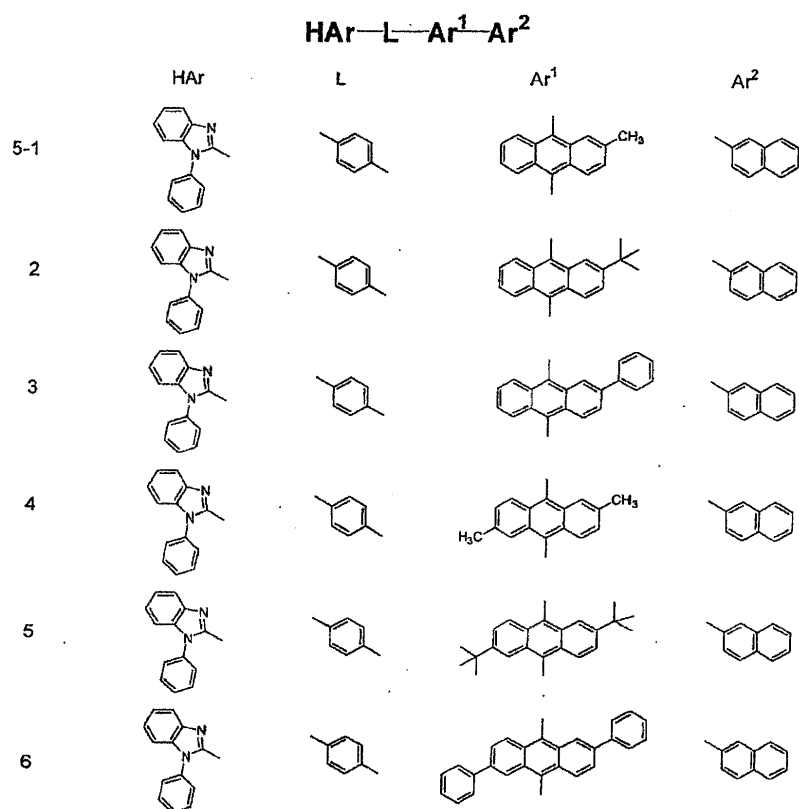
[0326]

[48]



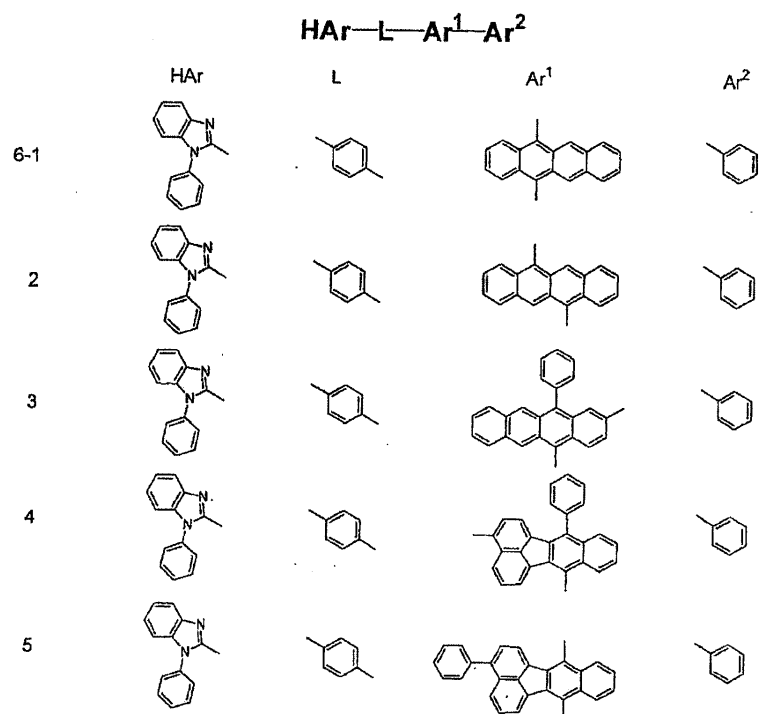
[0327]

[0328] [49]



[0329]

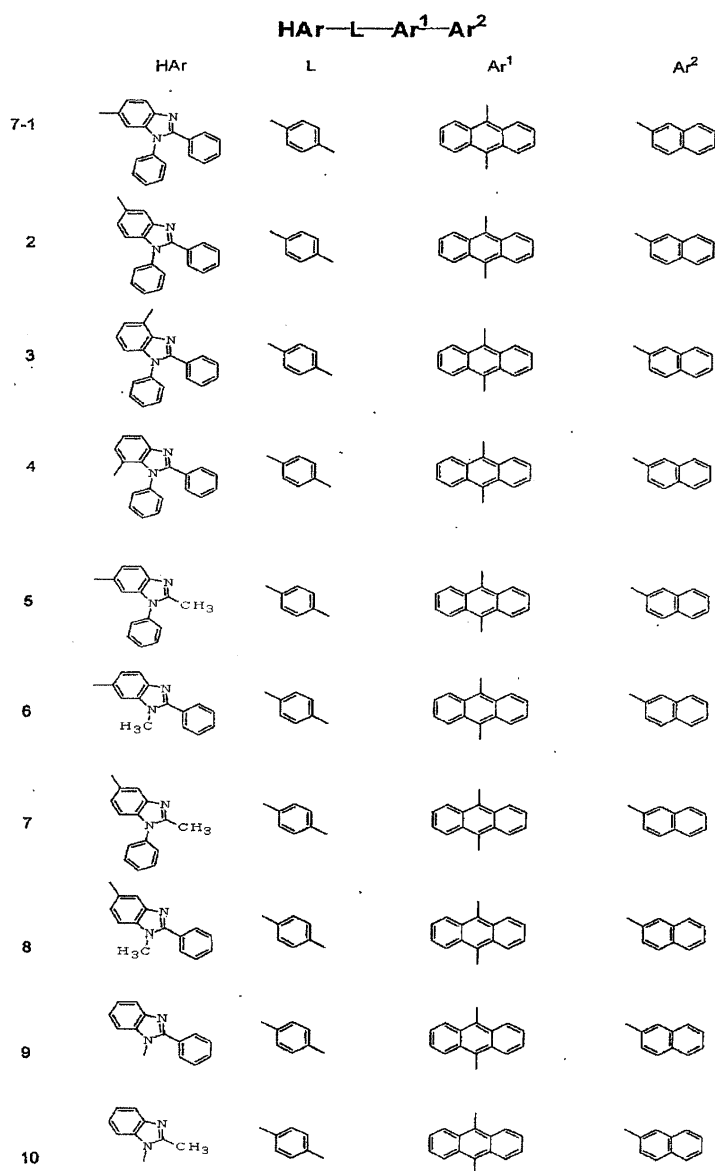
[0330] [50]



[0331]

[0332]

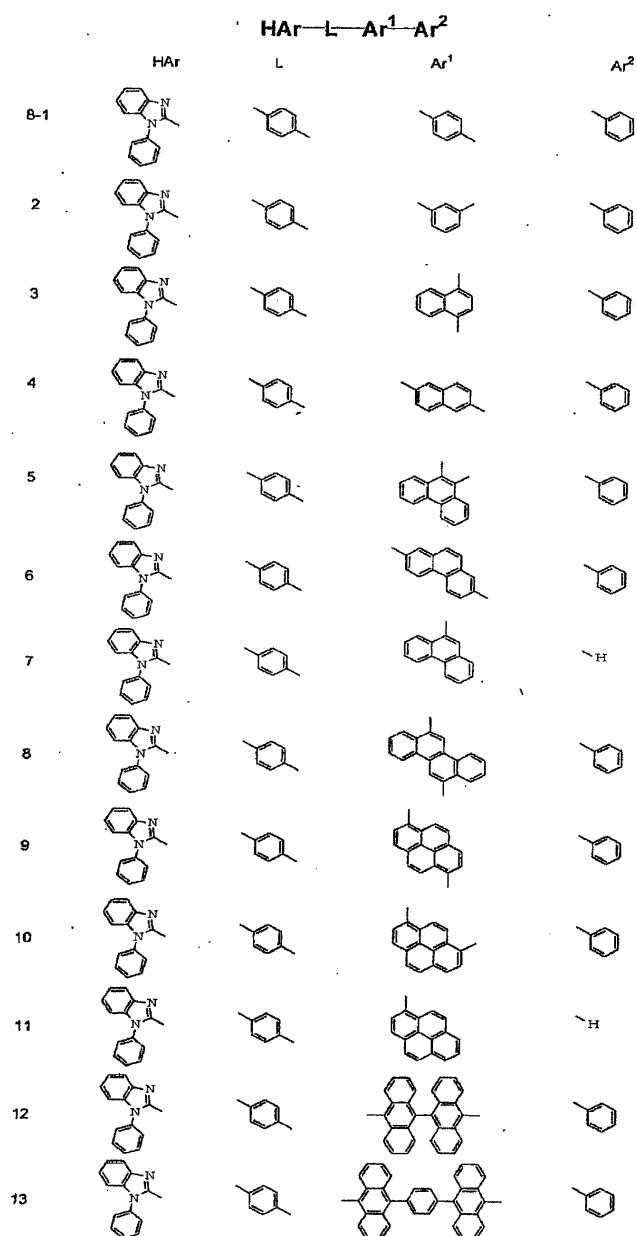
[51]



[0333]

[0334]

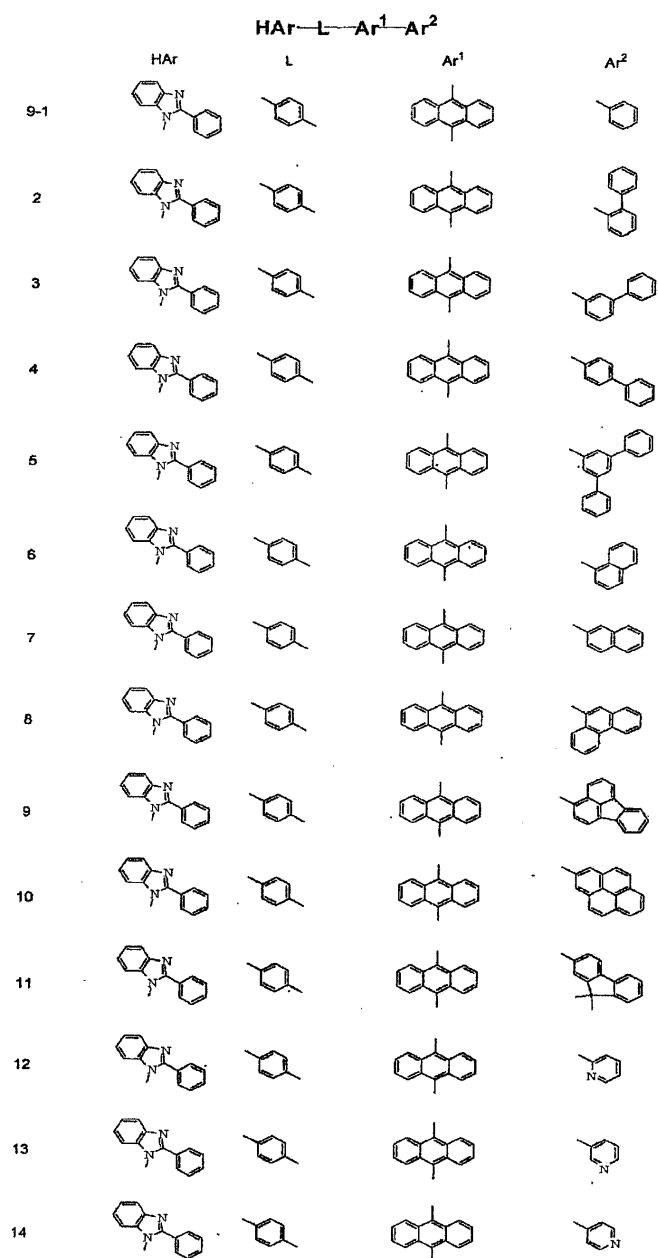
[52]



[0335]

[0336]

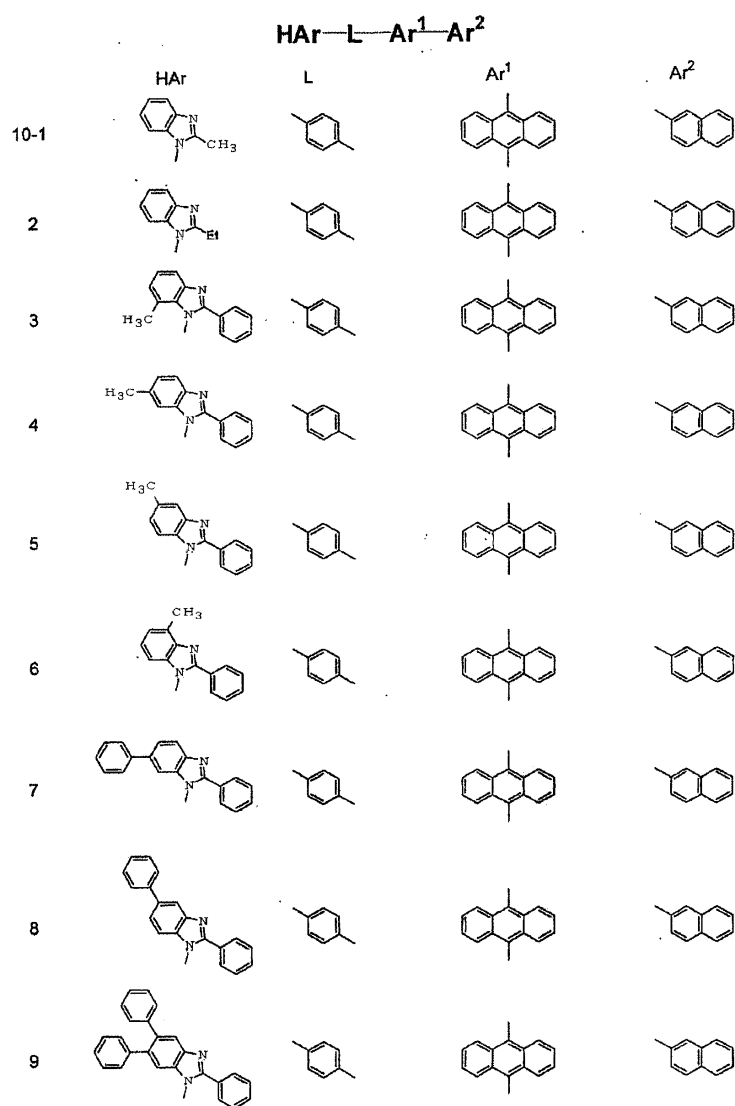
[53]



[0337]

[0338]

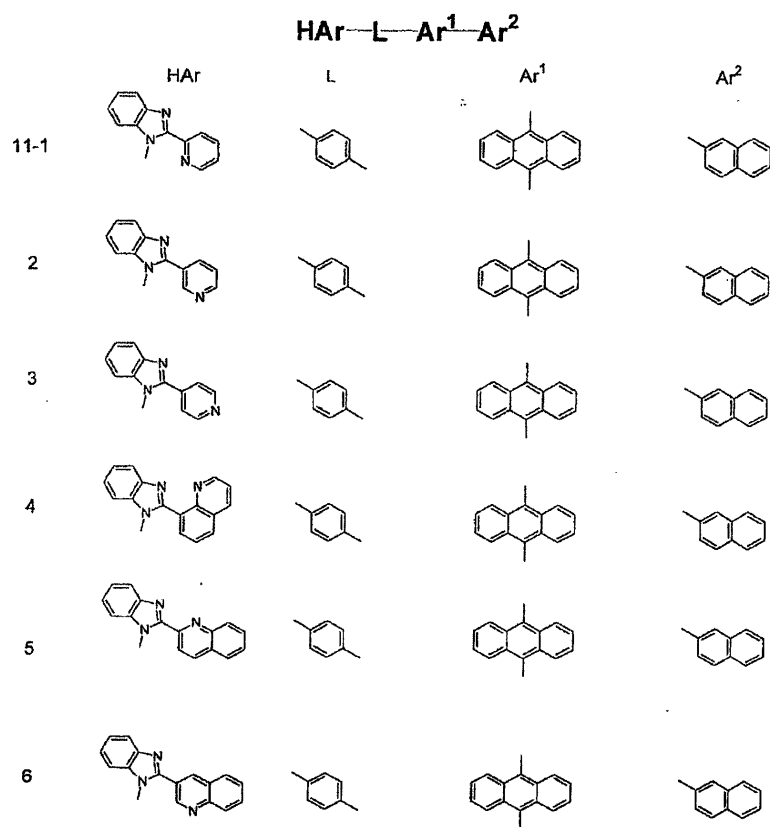
[54]



[0339]

[0340]

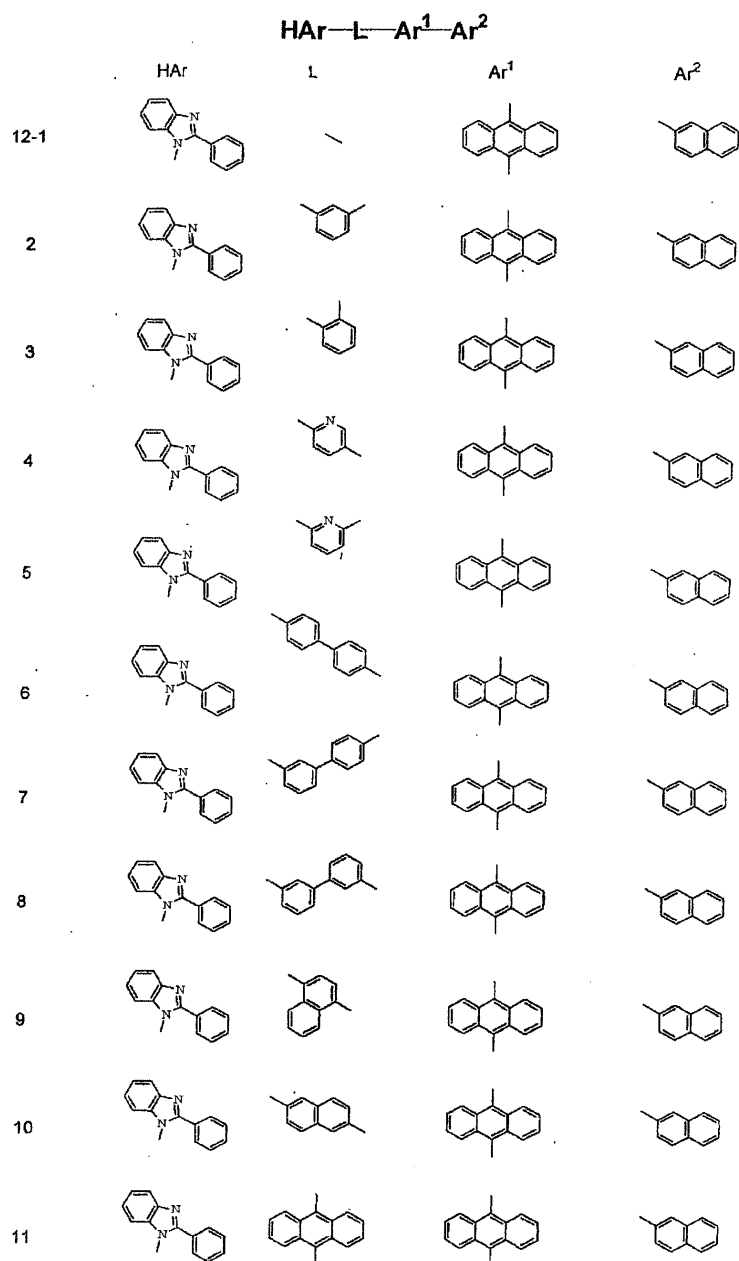
[55]



[0341]

[0342]

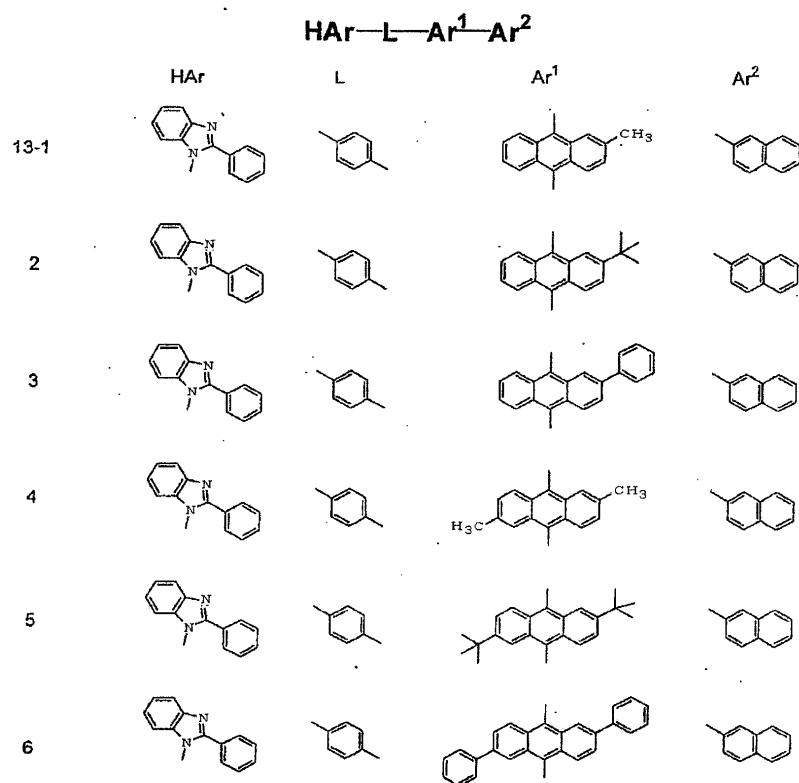
[56]



[0343]

[0344]

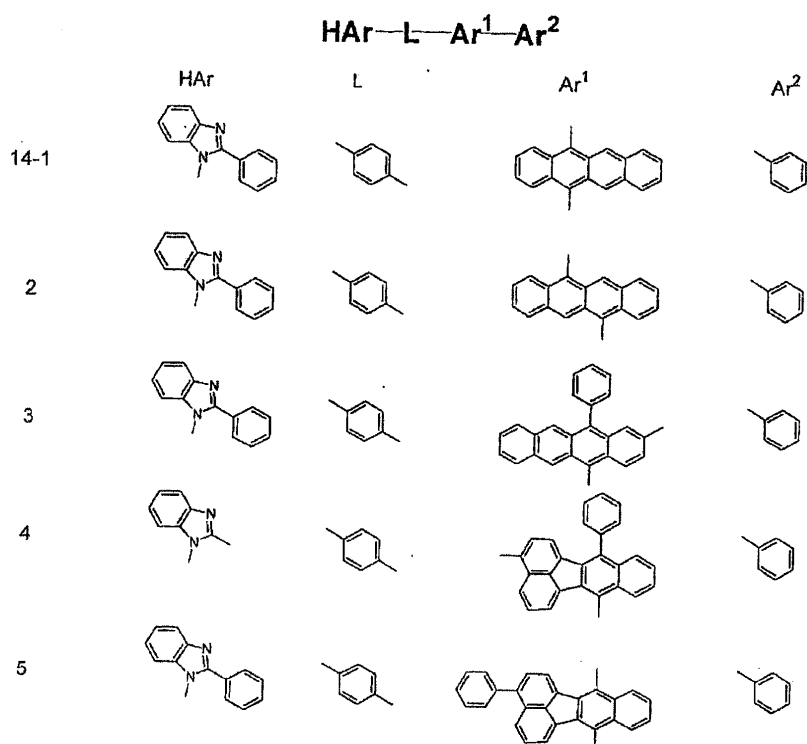
[57]



[0345]

[0346]

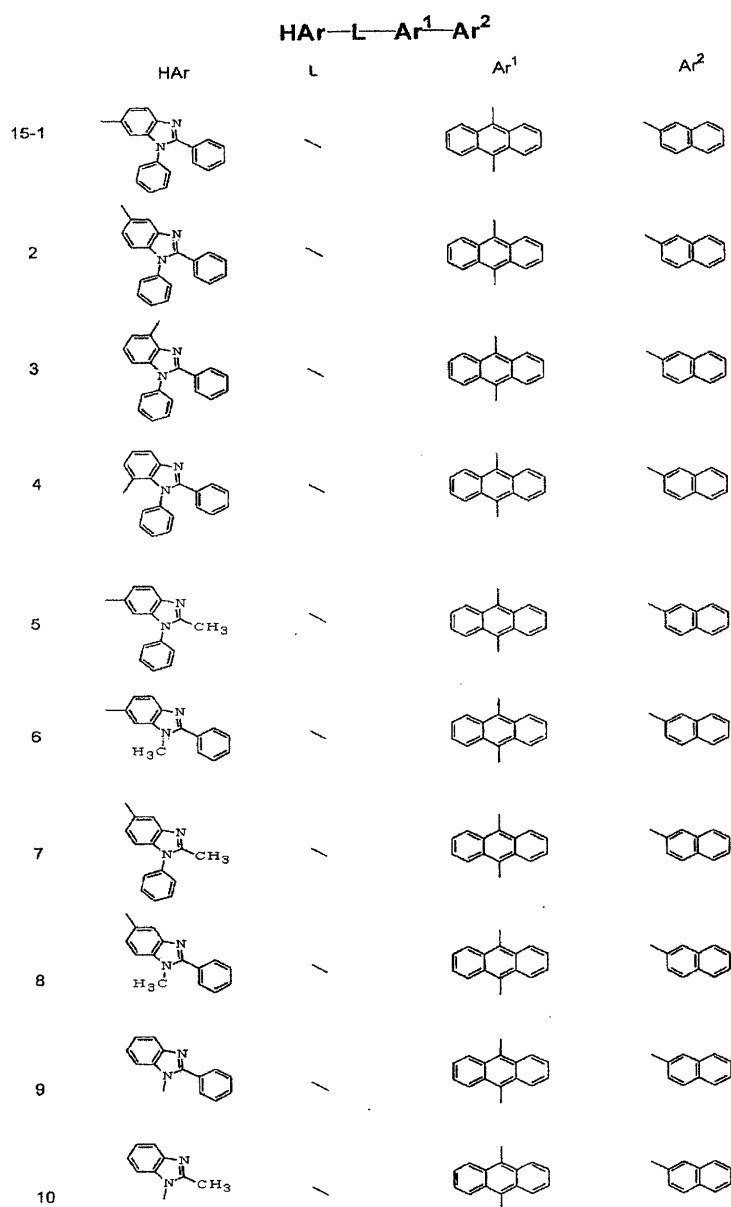
[58]



[0347]

[0348]

[59]



[0349]

[0350]

[60]



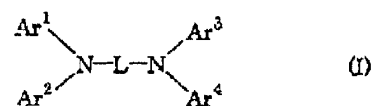
[0351]

[0359]

[0360]

[0361]

[62]



[0362]

[0363]



[0364]

1- , 2- , 9- , 1- , 2- , 3- , 4- ,
 9- , 1- , 2- , 9- , 1- , 2- , 4- , 2-
 , 3- , 4- , p- -4- , p- -3- , p- -2- , m- -4- ,
 m- -3- , m- -2- , o- , m- , p- , p-t- , p-(2-) ,
 3- -2- , 4- -1- , 4- -1- , 4' - , 4'' -t- -p- -4- ,
 , .

[0365]

5 50 , 1- , 2- , 3- ,
 , 2- , 3- , 4- , 1- , 2- , 3- , 4- , 5-
 , 6- , 7- , 1- , 2- , 3- , 4- , 5-
 , 6- , 7- , 2- , 3- , 2- , 3- , 4-
 , 5- , 6- , 7- , 1- , 3- , 4-
 , 5- , 6- , 7- , 7- , 3- , 4- ,
 5- , 6- , 7- , 8- , 1- , 3- , 4- , 5-
 , 6- , 7- , 8- , 2- , 5- , 6- ,
 1- , 2- , 3- , 4- , 9- , 1- , 2- ,
 , 3- , 4- , 6- , 7- , 8- , 9- ,
 , 10- , 1- , 2- , 3- , 4- , 9- ,
 , 1,7- -2- , 1,7- -3- , 1,7- -4- , 1,7- -5- ,
 1,7- -6- , 1,7- -8- , 1,7- -9- , 1,7- -10- , 1,8- ,
 -2- , 1,8- -3- , 1,8- -4- , 1,8- -5- , 1,8- -6- ,
 1,8- -7- , 1,8- -9- , 1,8- -10- , 1,9- -2- , 1,9- ,
 -3- , 1,9- -4- , 1,9- -5- , 1,9- -6- , 1,9- -7- ,
 1,9- -8- , 1,9- -10- , 1,10- -2- , 1,10- -3- , 1,10- ,
 -4- , 1,10- -5- , 2,9- -1- , 2,9- -3- , 2,9- -4- ,
 , 2,9- -5- , 2,9- -6- , 2,9- -7- , 2,9- -8- , 2,9- ,
 -10- , 2,8- -1- , 2,8- -3- , 2,8- -4- , 2,8- -5- ,
 , 2,8- -6- , 2,8- -7- , 2,8- -9- , 2,8- -10- , 2,7- ,
 -1- , 2,7- -3- , 2,7- -4- , 2,7- -5- , 2,7- - ,
 6- , 2,7- -8- , 2,7- -9- , 2,7- -10- , 1- ,
 2- , 1- , 2- , 3- , 4- , 10- ,
 1- , 2- , 3- , 4- , 10- , 2- , 4- ,
 , 5- , 2- , 5- , 3- , 2- , 3- , 2-

-1- , 2- -3- , 2- -4- , 2- -5- , 3- -1- , 3- -2- ,
 3- -4- , 3- -5- , 2-t- -4- , 3-(2-) -1- , 2- -1-
 , 4- -1- , 2- -3- , 4- -3- , 2-t- -1- , 4-t- -1- ,
 2-t- -3- , 4-t- -3- . , , ,
 , , , , , .

[0366]

L . 6 50 ,
 5 50 , 2 ,
 , 1 20 , 2 20 ,
 2 . 6 50 , 1,4- , 1,2- , 1,3-
 , 1,4- , 2,6- , 1,5- , 9,10- , 9,10- , 3,6-
 , 1,6- , 2,7- , 6,12- , 4,4' - , 3,3' - , 2,2
 ' - , 2,7- . 5 50 , 2,5-
 , 2,5- , 2,5- . 1,4- , 1,2-
 , 1,3- , 1,4- , 9,10- , 6,12- , 4,4' - , 3,3' -
 , 2,2' - , 2,7- .

[0367]

L 2 ,
 2 . 2
 , -4,4' - . -2,2' - , -3,3' - ,

[0368]

Ar¹ Ar⁴ L , 6 50 ,
 5 50 , 1 50 , 3
 50 , 1 50 , 7 50
 , 6 50 , 5 50
 , 6 50 , 2 50 ,
 50 6 50 5 50 ,
 , , , .

[0369]

6 50 , 1- , 2- , 1- , 2-
 , 9- , 1- , 2- , 3- , 4- , 9- , 1-
 , 2- , 9- , 1- , 2- , 4- , 2- , 3- , 4-
 , p- -4- , p- -3- , p- -2- , m- -4- , m- -3- , m- -
 2- , 0- , m- , p- , p-t- , p-(2-) , 3- -2- , 4- -
 1- , 4- -1- , 4' - , 4'' -t- -p- -4- , ,
 .

[0370]

5 50 , 1- , 2- , 3- ,
 , 2- , 3- , 4- , 1- , 2- , 3- , 4- , 5-
 , 6- , 7- , 1- , 2- , 3- , 4- , 5-
 , 6- , 7- , 2- , 3- , 2- , 3- ,
 4- , 5- , 6- , 7- , 1- , 3- ,
 4- , 5- , 6- , 7- , 3- , 4-
 , 5- , 6- , 7- , 8- , 1- , 3- ,
 4- , 5- , 6- , 7- , 8- , 2- , 5-
 , 6- , 1- , 2- , 3- , 4- , 9- ,
 1- , 2- , 3- , 4- , 6- , 7- ,
 , 8- , 9- , 10- , 1- , 2- , 3- ,
 , 4- , 9- , 1,7- -2- , 1,7- -3- , 1,7- -4- ,
 1,7- -5- , 1,7- -6- , 1,7- -8- , 1,7- -9- , 1,7-
 -10- , 1,8- -2- , 1,8- -3- , 1,8- -4- , 1,8- -5- ,

1,8- -6- , 1,8- -7- , 1,8- -9- , 1,8- -10- , 1,9-
 -2- , 1,9- -3- , 1,9- -4- , 1,9- -5- , 1,9- -6- ,
 1,9- -7- , 1,9- -8- , 1,9- -10- , 1,10- -2- , 1,10-
 -3- , 1,10- -4- , 1,10- -5- , 2,9- -1- , 2,9- -
 3- , 2,9- -4- , 2,9- -5- , 2,9- -6- , 2,9- -7- , 2,9-
 -8- , 2,9- -10- , 2,8- -1- , 2,8- -3- , 2,8- -
 4- , 2,8- -5- , 2,8- -6- , 2,8- -7- , 2,8- -9- , 2,8-
 -10- , 2,7- -1- , 2,7- -3- , 2,7- -4- , 2,7- -
 5- , 2,7- -6- , 2,7- -8- , 2,7- -9- , 2,7- -10- , 1-
 , 2- , 1- , 2- , 3- , 4- , 10-
 , 1- , 2- , 3- , 4- , 10- , 2-
 , 4- , 5- , 2- , 5- , 3- , 2- , 3-
 , 2- -1- , 2- -3- , 2- -4- , 2- -5- , 3- -1- , 3-
 -2- , 3- -4- , 3- -5- , 2-t- -4- , 3-(2-) -1- ,
 2- -1- , 4- -1- , 2- -3- , 4- -3- , 2-t- -1- , 4-t-
 -1- , 2-t- -3- , 4-t- -3- .

[0371]

1 50 , , , , n- ,
 s- , , t- , n- , n- , n- , n- , 1-
 , 2- , 2- , 1,2- , 1,3- ,
 2,3- -t- , 1,2,3- , , 1- , 2- ,
 2- , 1,2- , 1,3- , 2,3- -t- , 1,2,3-
 , , 1- , 2- , 2- , 1,2- , 1,3-
 , 2,3- -t- , 1,2,3- , , 1- , 2-
 , 2- , 1,2- , 1,3- , 2,3- -t- ,
 1,2,3- , , 1- , 2- , 2- , 1,2- ,
 , 1,3- , 2,3- -t- , 1,2,3- , , 1-
 , 2- , 2- , 1,2- , 1,3- , 2,3-
 -t- , 1,2,3- , , 1- , 2- , 2- ,
 1,2- , 1,3- , 2,3- -t- , 1,2,3- .

[0372]

3 50 , , , ,
 , 4- , 1- , 2- , 1- , 2- ,
 .

[0373]

1 50 , -0Y . Y , ,
 , , n- , s- , t- , n- , n- , n- ,
 n- , , 1- , 2- , 2- , 1,2-
 , 1,3- , 2,3- -t- , 1,2,3- ,
 , 1- , 2- , 2- , 1,2- , 1,3-
 , 2,3- -t- , 1,2,3- , , 1- , 2- , 2-
 , 1,2- , 1,3- , 2,3- -t- , 1,2,3-
 , , 1- , 2- , 2- , 1,2- , 1,3-
 , 2,3- -t- , 1,2,3- , , 1- , 2-
 , 2- , 1,2- , 1,3- , 2,3- -t- , 1,2,3-
 , , 1- , 2- , 2- ,
 1,2- , 1,3- , 2,3- -t- , 1,2,3- ,
 , 1- , 2- , 2- , 1,2- , 1,3- ,
 2,3- -t- , 1,2,3- .

[0374]

7 50 , , 1- , 2- , 1-
 , 2- , -t- , α - , 1- α - , 2- α - , 1-

α - , 2- α - , β - , 1- β - , 2- β - ,
 1- β - , 2- β - , 1- , 2-(1-) , p- , m-
 , 0- , p- , m- , 0- , p- , m- ,
 0- , p- , m- , 0- , p- , m- ,
 0- , p- , m- , 0- , p- , m- , 0-
 , p- , m- , 0- , 1- -2- , 1- -2-
 .

[0375]

6 50 , -OY' , Y' , 1-
 , 2- , 1- , 2- , 9- , 1- , 2- , 3- , 4-
 , 9- , 1- , 2- , 9- , 1- , 2- , 4- , 2-
 , 3- , 4- , p- -4- , p- -3- , p- -2- , m- -4-
 , m- -3- , m- -2- , 0- , m- , p- , p-t- , p-(2-)
 , 3- -2- , 4- -1- , 4- -1- , 4' - , 4''-t- -p- -
 4- .

[0376]

5 50 , -OZ' , Z' 2- ,
 3- , 2- , 3- , 4- , 2- , 3- , 4- , 5-
 , 6- , 7- , 1- , 3- , 4- , 5- , 6-
 , 7- , 2- , 3- , 2- , 3- , 4- , 5-
 , 6- , 7- , 1- , 3- , 4- , 5-
 , 6- , 7- , 2- , 3- , 4- , 5- , 6-
 , 7- , 8- , 1- , 3- , 4- , 5- , 6-
 , 7- , 8- , 2- , 5- , 6- ,
 1- , 2- , 3- , 4- , 1- , 2- , 3- ,
 , 4- , 6- , 7- , 8- , 9- ,
 10- , 1- , 2- , 3- , 4- , 9- , 1,7-
 -2- , 1,7- -3- , 1,7- -4- , 1,7- -5- , 1,7- -
 6- , 1,7- -8- , 1,7- -9- , 1,7- -10- , 1,8- -2- ,
 1,8- -3- , 1,8- -4- , 1,8- -5- , 1,8- -6- , 1,8-
 -7- , 1,8- -9- , 1,8- -10- , 1,9- -2- , 1,9- -3- ,
 1,9- -4- , 1,9- -5- , 1,9- -6- , 1,9- -7- , 1,9-
 -8- , 1,9- -10- , 1,10- -2- , 1,10- -3- , 1,10- -4-
 , 1,10- -5- , 2,9- -1- , 2,9- -3- , 2,9- -4- , 2,9-
 -5- , 2,9- -6- , 2,9- -7- , 2,9- -8- , 2,9- -10-
 , 2,8- -1- , 2,8- -3- , 2,8- -4- , 2,8- -5- , 2,8-
 -6- , 2,8- -7- , 2,8- -9- , 2,8- -10- , 2,7- -1-
 , 2,7- -3- , 2,7- -4- , 2,7- -5- , 2,7- -6- , 2,7-
 -8- , 2,7- -9- , 2,7- -10- , 1- , 2- , 1-
 , 2- , 3- , 4- , 1- , 2- , 3-
 , 4- , 2- , 4- , 5- , 2- , 5- , 3-
 , 2- , 3- , 2- -1- , 2- -3- , 2- -4- , 2- -5-
 , 3- -1- , 3- -2- , 3- -4- , 3- -5- , 2-t- -4- , 3-
 (2-) -1- , 2- -1- , 4- -1- , 2- -3- , 4- -3- ,
 2-t- -1- , 4-t- -1- , 2-t- -3- , 4-t- -3- .

[0377]

6 50 , -SY'' , Y'' , 1-
 , 2- , 1- , 2- , 9- , 1- , 2- , 3- , 4-
 , 9- , 1- , 2- , 9- , 1- , 2- , 4- , 2-
 , 3- , 4- , p- -4- , p- -3- , p- -2- , m- -4-
 , m- -3- , m- -2- , 0- , m- , p- , p-t- , p-(2-)
 , 3- -2- , 4- -1- , 4- -1- , 4' - , 4''-t- -p- -

4-

[0378]

5 50 , -SZ" , Z" 2- ,
 3- , , 2- , 3- , 4- , 2- , 3- , 4- , 5-
 , 6- , 7- , 1- , 3- , 4- , 5- , 6-
 , 7- , 2- , 3- , 2- , 3- , 4- , 5-
 , 6- , 7- , 1- , 3- , 4- , 5-
 , 6- , 7- , 2- , 3- , 4- , 5- , 6-
 , 7- , 8- , 1- , 3- , 4- , 5- , 6-
 , 7- , 8- , 2- , 5- , 6- ,
 1- , 2- , 3- , 4- , 1- , 2- , 3-
 , 4- , 6- , 7- , 8- , 9- ,
 10- , 1- , 2- , 3- , 4- , 9- , 1,7-
 -2- , 1,7- -3- , 1,7- -4- , 1,7- -5- , 1,7- -
 6- , 1,7- -8- , 1,7- -9- , 1,7- -10- , 1,8- -2- ,
 1,8- -3- , 1,8- -4- , 1,8- -5- , 1,8- -6- , 1,8-
 -7- , 1,8- -9- , 1,8- -10- , 1,9- -2- , 1,9- -3- ,
 1,9- -4- , 1,9- -5- , 1,9- -6- , 1,9- -7- , 1,9-
 -8- , 1,9- -10- , 1,10- -2- , 1,10- -3- , 1,10- -4-
 , 1,10- -5- , 2,9- -1- , 2,9- -3- , 2,9- -4- , 2,9-
 -5- , 2,9- -6- , 2,9- -7- , 2,9- -8- , 2,9- -10-
 , 2,8- -1- , 2,8- -3- , 2,8- -4- , 2,8- -5- , 2,8-
 -6- , 2,8- -7- , 2,8- -9- , 2,8- -10- , 2,7- -1-
 , 2,7- -3- , 2,7- -4- , 2,7- -5- , 2,7- -6- , 2,7-
 -8- , 2,7- -9- , 2,7- -10- , 1- , 2- , 1-
 , 2- , 3- , 4- , 1- , 2- , 3-
 , 4- , 2- , 4- , 5- , 2- , 5- , 3-
 , 2- , 3- , 2- -1- , 2- -3- , 2- -4- , 2- -5-
 , 3- -1- , 3- -2- , 3- -4- , 3- -5- , 2-t- -4- , 3-
 (2-) -1- , 2- -1- , 4- -1- , 2- -3- , 4- -3- ,
 2-t- -1- , 4-t- -1- , 2-t- -3- , 4-t- -3- .

[0379]

2 50 -C00Z , Z ,
 , , n- , s- , t- , n- , n- , n- ,
 n- , , 1- , 2- , 2- , 1,2-
 , 1,3- , 2,3- -t- , 1,2,3- ,
 , 1- , 2- , 2- , 1,2- , 1,3-
 , 2,3- -t- , 1,2,3- , 1- , 2- , 2-
 , 1,2- , 1,3- , 2,3- -t- , 1,2,3-
 , , 1- , 2- , 2- , 1,2- , 1,3-
 , 2,3- -t- , 1,2,3- , 1- , 2-
 , 2- , 1,2- , 1,3- , 2,3- -t- , 1,2,3-
 , , 1- , 2- , 2- , 2- ,
 1,2- , 1,3- , 2,3- -t- , 1,2,3- ,
 , 1- , 2- , 2- , 1,2- , 1,3- ,
 2,3- -t- , 1,2,3- .

[0380]

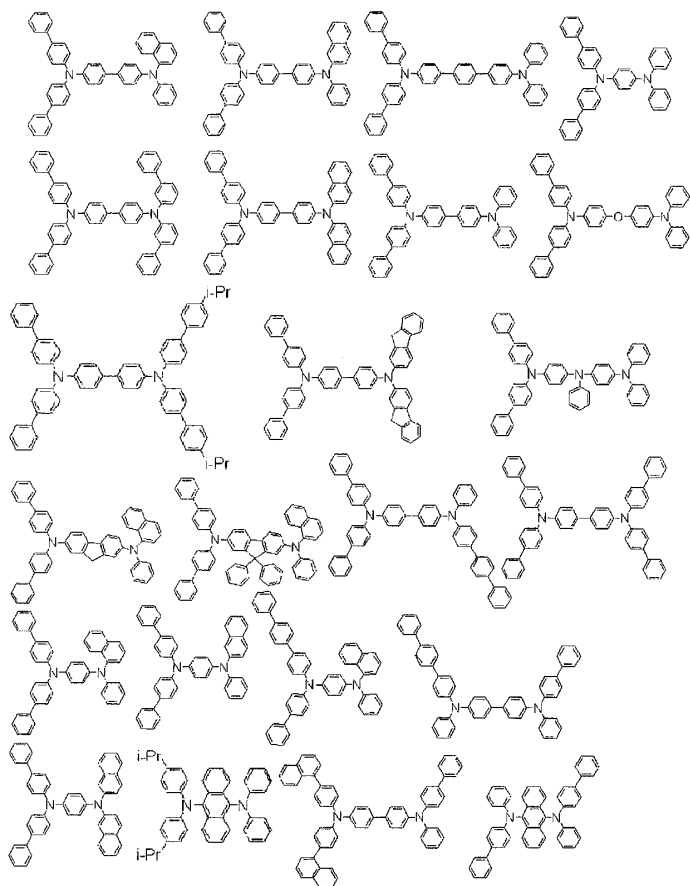
6 50 5 50
 -NPQ , P, Q , 1- , 2- , 1- , 2-
 , 9- , 1- , 2- , 3- , 4- , 9- , 1- ,
 2- , 9- , 1- , 2- , 4- , 2- , 3- , 4-
 , p- -4- , p- -3- , p- -2- , m- -4- , m- -3- , m- -2-
 , o- , m- , p- , p-t- , p-(2-) , 3- -2- , 4- -1-

, 4- -1- , 4' - , 4"-t- -p- -4- , 2- , 3- ,
 , 2- , 3- , 4- , 2- , 3- , 4- , 5- , 6-
 , 7- , 1- , 3- , 4- , 5- , 6- , 7-
 , 2- , 3- , 2- , 3- , 4- , 5- , 6-
 , 7- , 1- , 3- , 4- , 5- , 6-
 , 7- , 2- , 3- , 4- , 5- , 6- , 7-
 , 8- , 1- , 3- , 4- , 5- , 6- , 7-
 , 8- , 2- , 5- , 6- , 1- ,
 2- , 3- , 4- , 1- , 2- , 3- , 4-
 , 6- , 7- , 8- , 9- , 10-
 , 1- , 2- , 3- , 4- , 9- , 1,7- -2-
 , 1,7- -3- , 1,7- -4- , 1,7- -5- , 1,7- -6- , 1,7-
 -8- , 1,7- -9- , 1,7- -10- , 1,8- -2- , 1,8- -3-
 , 1,8- -4- , 1,8- -5- , 1,8- -6- , 1,8- -7- , 1,8-
 -9- , 1,8- -10- , 1,9- -2- , 1,9- -3- , 1,9- -4-
 , 1,9- -5- , 1,9- -6- , 1,9- -7- , 1,9- -8- , 1,9-
 -10- , 1,10- -2- , 1,10- -3- , 1,10- -4- , 1,10- -
 5- , 2,9- -1- , 2,9- -3- , 2,9- -4- , 2,9- -5- , 2,9-
 -6- , 2,9- -7- , 2,9- -8- , 2,9- -10- , 2,8- -
 1- , 2,8- -3- , 2,8- -4- , 2,8- -5- , 2,8- -6- , 2,8-
 -7- , 2,8- -9- , 2,8- -10- , 2,7- -1- , 2,7- -
 3- , 2,7- -4- , 2,7- -5- , 2,7- -6- , 2,7- -8- , 2,7-
 -9- , 2,7- -10- , 1- , 2- , 1- , 2-
 , 3- , 4- , 1- , 2- , 3- , 4- ,
 2- , 4- , 5- , 2- , 5- , 3- , 2- ,
 3- , 2- -1- , 2- -3- , 2- -4- , 2- -5- , 3- -1-
 , 3- -2- , 3- -4- , 3- -5- , 2-t- -4- , 3-(2-) -
 1- , 2- -1- , 4- -1- , 2- -3- , 4- -3- , 2-t- -1- ,
 4-t- -1- , 2-t- -3- , 4-t- -3- .

(I)

[0381]

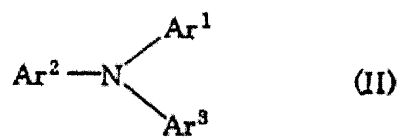
[0382] [63]



[0383]

[0384] , () .

[0385] [64]

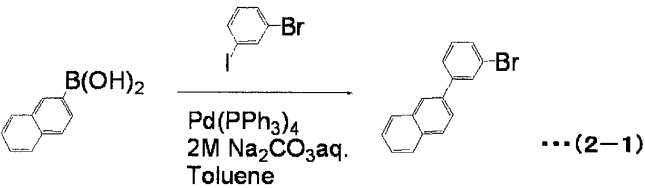


[0386]

[0387] () , Ar^1 Ar^3 (I) Ar^1 Ar^4 .
 () , .

[0402] 2-(3-

[0403] [66]



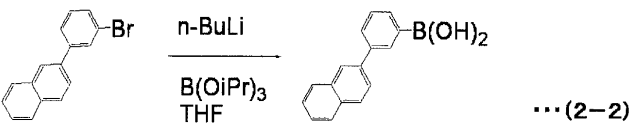
[0404]

[0405] , 2- 243 g (1.41), 3- 400 g (1.41), () (0) 3.27 g (28.2 m), 6.4 ℓ, 2 M 3.2 ℓ , 24 . , . , 2(3-) 303 g (76) .

[0406] (2) 2-2

[0407] 3-(2-

[0408] [67]



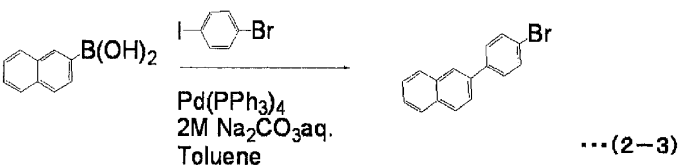
[0409]

[0410] , 2(3-) 212 g (748 m), THF 3 ℓ -10 , 1.6 M n- 600 (948 m) . , 0 2 . , -78 , 450 g (2.39) 17 . 3 ℓ . , 1 . , 3-(2-) 126 g (67) .

[0411] (3) 2-3

[0412] 2-(4-

[0413] [68]



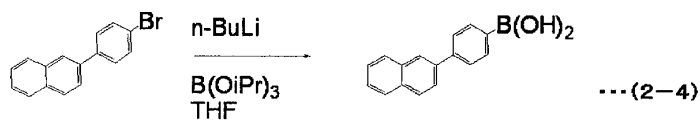
[0414]

[0415] , 2- 70.0 g (407 m), 4- 115.1 g (407 m), () (0) 9.40 g (8.14 m), 1.2 ℓ, 2 M 600 , 90 20 . , (, 2(4-) 77.2 g (67) .

[0416] (4) 2-4

[0417] 4-(2-

[0418] [69]



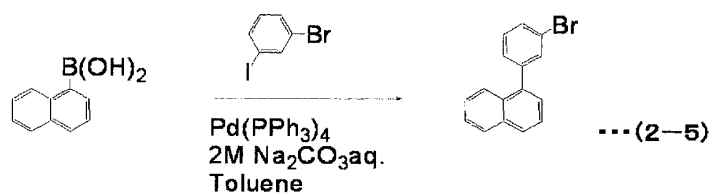
[0419]

[0420] , 2(4-) 50.0 g (177 m), THF 500 -60
 , 1.56 M n- 136 (212 m)
 -60 , 1 . -60 , 99.6 g (529 m)
 , 18 .
 , 1 .
 , 4-(2-) 33.6 g (84) .

[0421] (5) 2-5

[0422] 1-(3-)

[0423] [70]



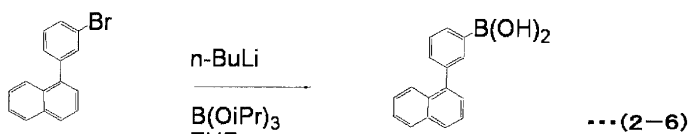
[0424]

[0425] , 1- 200.0 g (1.163), 3- 329.0 g (1.163),
 () (0) 26.9 g (23.3 m), 3.7 ℓ , 2 M 1.74 ℓ ,
 24 .
 , 1-(3-) 250 g (76) .

[0426] (6) 2-6

[0427] 3-(1-)

[0428] [71]



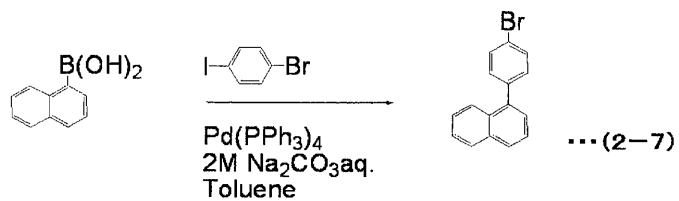
[0429]

[0430] , 1-(3-) 200.0 g (706.3 m), THF 2.1 ℓ -60
 , 1.56 M n- 543 (847 m)
 -60 2 . -60 ,
 398.5 g (2.119) 17 .
 , 1 .
 , 3-(1-) 126 g (67) .

[0431] (7) 2-7

[0432] 1-(4-)

[0433] [72]



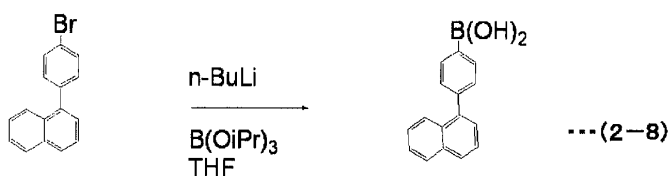
[0434]

[0435] , 1- 200.0 g (1.163), 4- 329.0 g (1.163),
 () (0) 26.9 g (23.3 m), 3.7 ℓ, 2 M 1.74 ℓ ,
 90 24 . , .
 , 1-(4-) 268 g (81) .

[0436] (8) 2-8

[0437] 4-(1-)

[0438] [73]



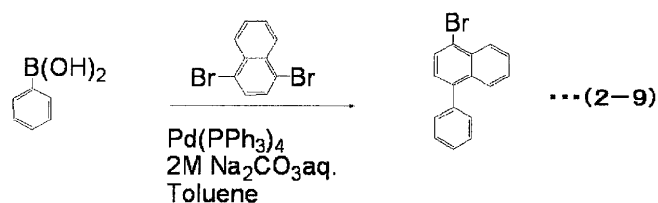
[0439]

[0440] , 1-(4-) 208.8 g (737.4 m), THF 2.1 ℓ -60
 , 1.56 M n- 567 (884.9 m) . ,
 -60 2 . , -60 416 g (2.21)
 . 17 . ,
 1 . ,
 , 4-(1-) 126 g (67) .

[0441] (9) 2-9

[0442] 1- -4-

[0443] [74]



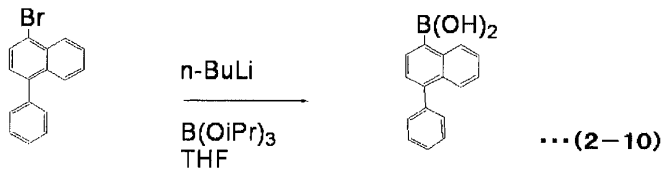
[0444]

[0445] , 128.0 g (1.049), 1,4- 300.0 g (1.163), ()
 (0) 24.2 g (21.0 m), 4.3 ℓ, 2 M 1.60 ℓ
 , 78 24 . , .
 , 1- -4- 122 g (41) .

[0446] (10) 2-10

[0447] 1-(4-)-

[0448] [75]



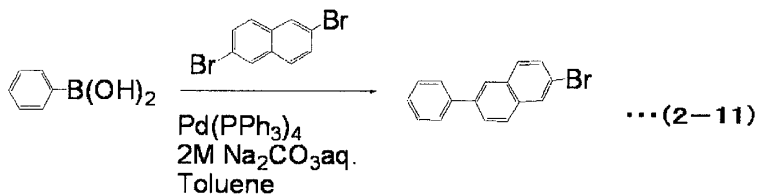
[0449]

[0450] , 1- -4- 121.0 g (427.3 m), THF 1.2 ℓ , 1.2 ℓ
-20 , 1.56 M n- 360 (562 m)
· , -20 1 · -60 ,
241.1 g (1.28) · , 16
· , 1 · ,
· , 1-(4-)- 61.0 g (58
) ·

[0451] (11) 2-11

[0452] 2- -6-

[0453] [76]



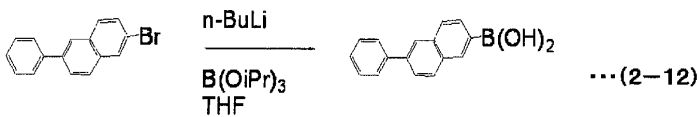
[0454]

[0455] , 128.0 g (1.049) , 2,6- 300.0 g (1.163) , ()
(0) 24.2 g (21.0 m) , 4.3 ℓ , 2 M 1.60 ℓ
, 78 24 · ,
· , 2- -6- 108 g (36)
·

[0456] (12) 2-12

[0457] 2-(6-)-

[0458] [77]



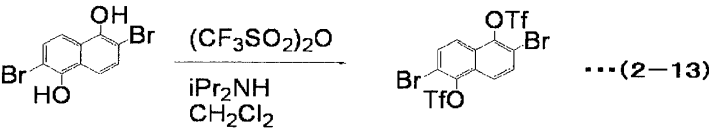
[0459]

[0460] , 2- -6- 100.0 g (353.1 m), THF 1.2 ℓ , 1.2 ℓ
-20 , 1.56 M n- 280 (437 m)
· , -20 1 · -60 ,
199.3 g (1.06) · , 16
· , 1 · ,
· , 2-(6-)- 58.0 g (55
) ·

[0461] (13) 2-13

[0462] 2,6- -1,5- ()-

[0463] [78]



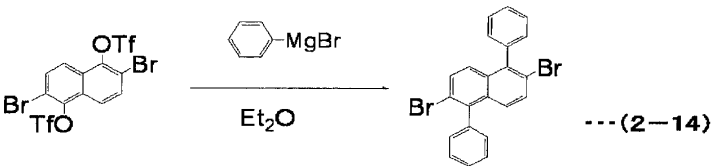
[0464]

[0465] , 2,6- -1,5- 25.00 g (78.6 m), 30.48 g (235.9 m), 250 0 , 65.55 g (235.9 m) , 18 . , 2,6- -1,5- ()- 36.0 g (79) .

[0466] (14) 2-14

[0467] 2,6- -1,5-

[0468] [79]



[0469]

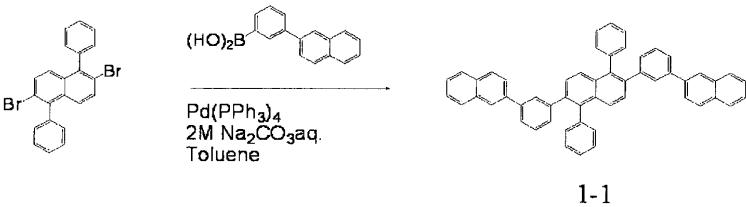
[0470] , 5-[[()]] 36.0 g (61.8 m), $\text{PdCl}_2(\text{dppp})$ 3.60 g (6.18 m), 10.8 g (123.7 m), 300 0 , 2.0 M- THF 68.0 (136.0 m) , 18 . 2 M- . , 2,6- -1,5- 18.0 g (66) .

[0471] []

[0472] , , .

[0473] (17) 1-1

[0474] [80]



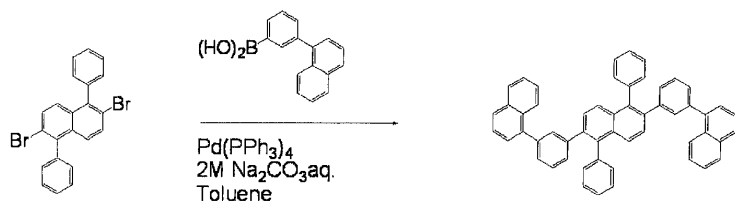
[0475]

[0476] , 2,6- -1,5- 7.00 g (16.0 m), 3-(2-) 8.32 g (33.6 m), () (0) 0.74 g (0.64 m) , 200 , 50 , 2 M 48 , 90 10 . , , , , , 1 . , 1-1 2.20 g (49) .

[0477] , 684.28 m/e 684 .

[0478] (18) 1-2

[0479] [81]



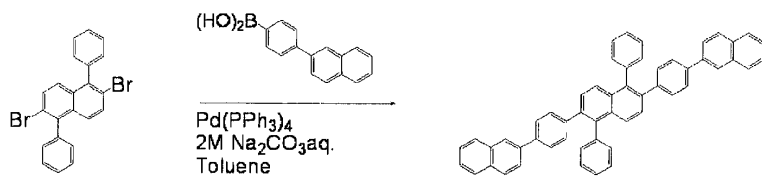
[0480]

[0481] 1-1 , 3-(2-) , 3-(1-)

[0482] , 684.28 m/e 684 .

[0483] (19) 1-3

[0484] [82]



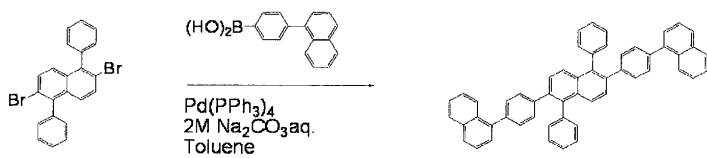
[0485]

[0486] 1-1 , 3-(2-) , 4-(2-)

[0487] , 684.28 m/e 684 .

[0488] (20) 1-4

[0489] [83]



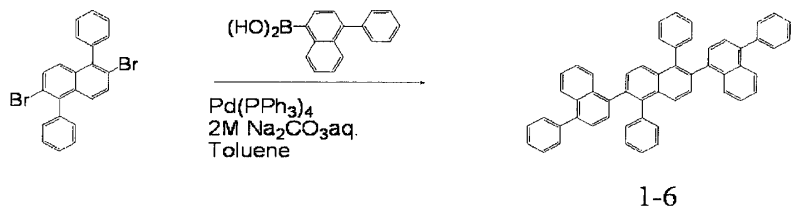
[0490]

[0491] 1-1 , 3-(2-) , 4-(1-)

[0492] , 684.28 m/e 684 .

[0493] (21) 1-6

[0494] [84]



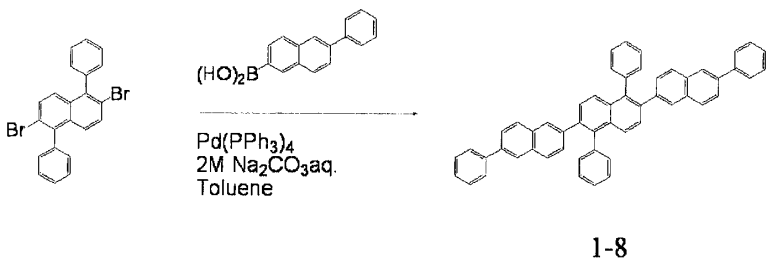
[0495]

[0496] 1-1 , 3-(2-) , 1-(4-) - -

[0497] , 684.28 m/e 684 .

[0498] (22) 1-8

[0499] [85]



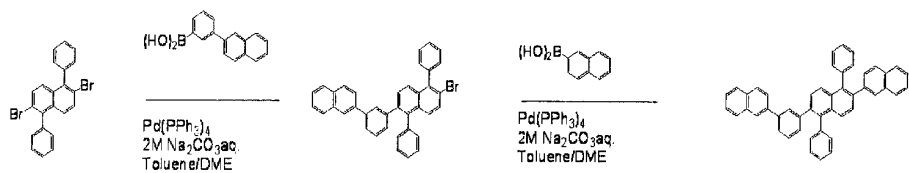
[0500]

[0501] 1-1 , 3-(2-) , 2-(6-) - -

[0502] , 684.28 m/e 684 .

[0503] (23) 1-26

[0504] [86]



[0505]

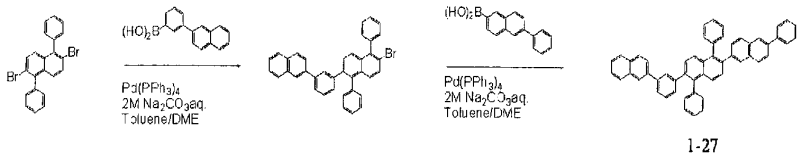
[0506] , 2,6- -1,5- 10.00 g (22.8 m), 3-(2-) 5.66 g
(22.8 m), () (0) 0.53 g (0.46 m), 200 , 50 , 2
M 34 , 90 10 .
, 1 . , , , , ,

[0507] , 2- -7-(3-(-2-))-1,5- 4.30 g (34) .
1.38 g (8.04 m), () (0) 0.18 g (0.15 m), 100 ,
20 , 2 M 12 , 90 10 .
, 1 . , , , , ,
, , , 1-26 1.20 g (55) .

[0508] , 608.25 m/e 608 .

[0509] (24) 1-27

[0510] [87]

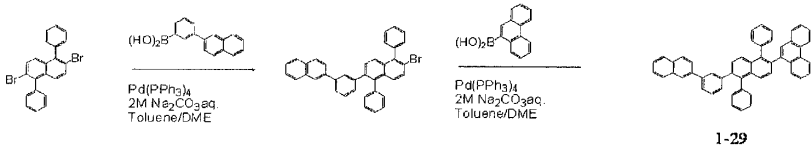


[0511]
[0512] 1-26 , 2- , 6- -2-

[0513] , 684.285 m/e 684 .

[0514] (25) 1-29

[0515] [88]

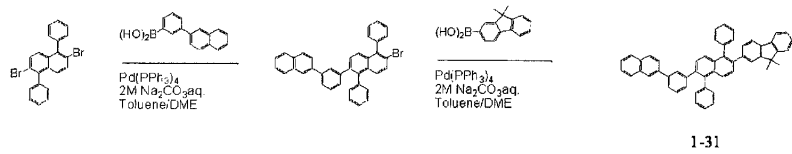


[0516]
[0517] 1-26 , 2- , 9-

[0518] , 658.27 m/e 658 .

[0519] (26) 1-31

[0520] [89]

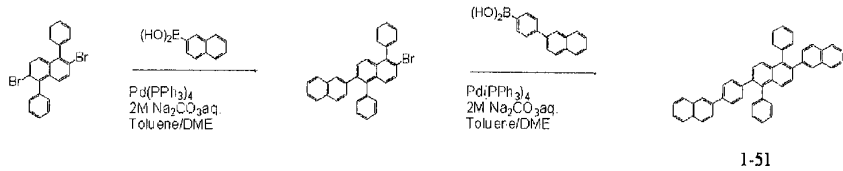


[0521]
[0522] 1-26 , 3-(2-) 4-(2-) , 2-
9,9- -9H- -2- - .

[0523] , 674.30 m/e 674 .

[0524] (27) 1-51

[0525] [90]

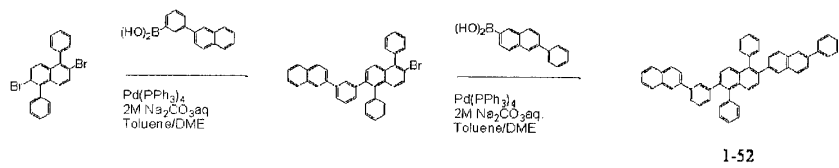


[0526]
[0527] 1-26 , 3-(2-) 2- , 2-
4-(2-) .

[0528] , 608.25 m/e 608 .

[0529] (28) 1-52

[0530] [91]



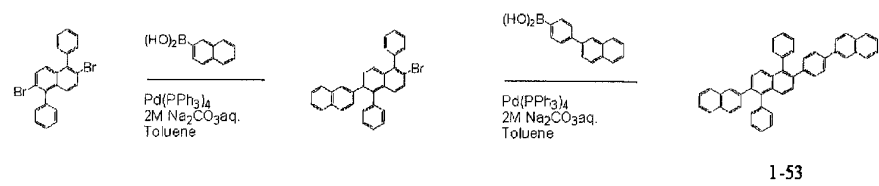
[0531]

[0532] 1-26 , 2- , 6- -2-

[0533] , 684.28 m/e 684 .

[0534] (29) 1-53

[0535] [92]



[0536]

[0537] 1-26 , 3-(2-) 2- , 2-
6- -2- .

[0538] , 608.25 m/e 608 .

[0539] , , FD-MS () .
FD-MS () .

[0540] : JSM-700 ()

[0541] : 8 kV

[0542] m/z 50 3000

[0543] () :

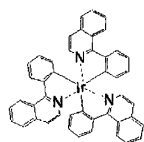
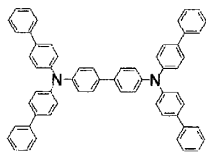
[0544] : 0 mA → 2 mA/ → 40 mA (10)

[0545] _____

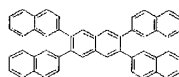
[0546] , , .

[0547] , .

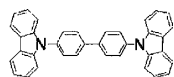
[0548] [93]

Ir(piq)₃

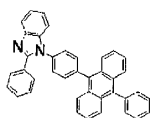
HT1



화합물A



CBP



ET1

[0549]

[0550] [1]

[0551] (EL)

[0552] 25 × 75 × 0.7 IT0 ()
5 , UV 30 .

50 HT1 , HT1 40
1-1, Ir(piq)₃ 10 ()
()
40 ET1 , LiF
() 1 min 0.5 LiF Al
150 EL .

[0553] [2 13, 1, 2]

[0554] 1 1-1 , 1
1 EL .

[0555] [EL]

[0556] 1 13, 1, 2 EL , ,
10 mA/ (5000 cd/) , 70
A, B
1 .

1

실시에	호스트 화합물	전압 (V)	발광효율 (cd/A)	휘도 반감 수명 (시간)	70°C 구동시의 화소 균일성
실시에 1	1-1	4.2	9.3	5,200	A
실시에 2	1-2	4.3	8.7	4,800	A
실시에 3	1-3	4.1	8.9	5,500	A
실시에 4	1-4	4.4	8.6	4,500	A
실시에 5	1-6	4.2	8.3	4,500	A
실시에 6	1-8	4.2	8.4	5,400	A
실시에 7	1-26	4.5	9.2	4,800	A
실시에 8	1-27	4.1	9.1	4,600	A
실시에 9	1-29	4.1	8.6	5,000	A
실시에 10	1-31	4.3	9.2	5,200	A
실시에 11	1-51	4.5	8.3	5,500	A
실시에 12	1-52	4.4	9.4	5,200	A
실시에 13	1-53	4.1	9.2	5,300	A
비교예 1	CBP	5.4	6.3	500	B
비교예 2	화합물 A	5.0	8.9	4,000	B

[0557]

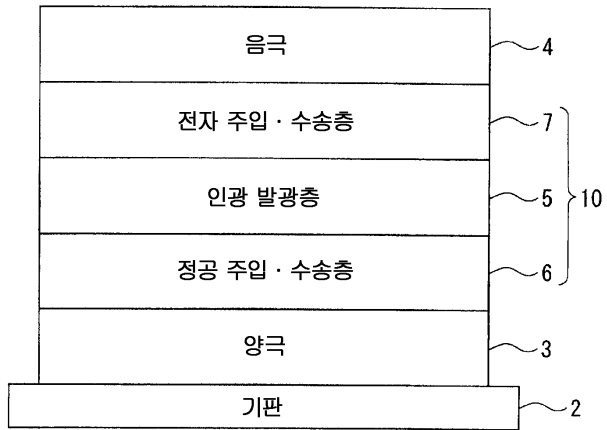
[0558] , 1, 2 EL 70 1 13 EL ,

[0559] , EL , ,

[0560] , EL EL .

[0561] 1 : EL
2 :
3 :
4 :
5 :
6 : .
7 : .
10 :

1



专利名称(译)	萘衍生物，有机EL器件用材料和使用它们的有机EL器件		
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发明人	가와무라마사히로 니시무라가즈키 다카시마요리유키 이토미츠노리 이와쿠마도시히로 오기와라도시나리 호소카와지시오 후쿠오카겐이치		
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外部链接	Espacenet		

摘要(译)

萘衍生物按下式 (1) 表示。[化学式1]在图像 (特殊参考) 方程式 (1) 的存在下，显示出Ar 1~Ar 4的芳香烃，是蒽骨架，芘骨架和东盟三烯骨架或者，无萘并蒽骨架的核数为6到18.n，m和l表示固定数小于5，超过1，p表示小于5的固定数。在n的情况下，m，l和p为2以上，多个Ar 1~Ar 4 s相同且不同。

1

