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C09K 11/06

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(43)

2002 - 0036018
2002 05 16

(21)
(22)

10 - 2000 - 0065866
2000 11 07

(71)

575

(72)

103 - 6

103 - 6

5가1

5가1

5가1

(74)

:

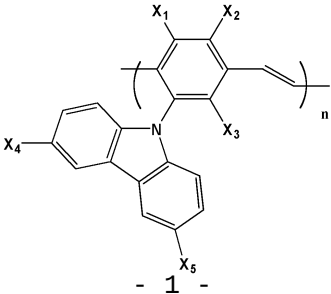
(54)

1

,

.

[1]



	X_1, X_2, X_3, X_4	X_5		가 1~40		가		4~14
		1	40					
6								
1	1	2	(2 - (N -	) - 5 - (2 -	) - 1,4 -	)		
2	2		(2 - (N -	) - 5 - (2 -	) - 1,4 -	)	^1H - NMR	,
3	2		(2 - (N -	) - 5 - (2 -	) - 1,4 -	)	FT - IR	,
4	1		[2 - (N -	) - 5 - (2 -	) - 1,4 -	]	가	
			(UV - Vis spectrum)	(Photoluminescence Spectrum)			(Electro - lum	
			inescence Spectrum),					
5a	5b	1	[2 - (N -	) - 5 - (2 -	) - 1,4 -	]		
	TGA		(thermogram)	DSC				
6	2							
7	2			(forward bias)	-	-	(current - vol	
			tage - luminance curve, I - V - L curve)					

1

가
(optoelectronic device)

(Flat Panel Display) CRT(cathod ray tube) TV
 CRT 21 , PC, PDA
 가 가 가
 가 (electrolu
 minescence display) 가 (backlight) 가
 가 GaN, Zn
 S SiC
 200V 가
 가

, 1987 (Eastmann Kodak) - (alumina - quinone, Alq3) π -
 가 가 가 (color - tuni
 ng) 가 가 가
 π - 가 가
 (band gap) 가
 " π - (conjugated polymer)" . { 가
 } 1990 Cambridge (p -)
 (poly(p - phenylenevinylene): PPV) 가 π -
 가

,
 (hole) (electron)
 , PPV p - 가
 가 가

, PPV

1

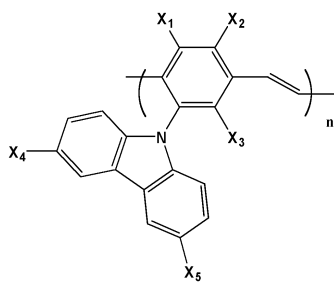
가 ,

PPV

PPV

1

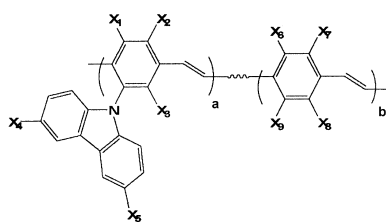
[1]



X_1, X_2, X_3, X_4 X_5 , 가 1~40 , 가 , , 1 40 4~14

PPV 3

[3]



$X_1, \dots, X_9$ 가 1~40, $X_{10}, \dots, X_{14}$ 가 4~14, a, b $0.1 \leq a/(a+b) \leq 0.9$.

PPV 가 1:99 ~ 99:1

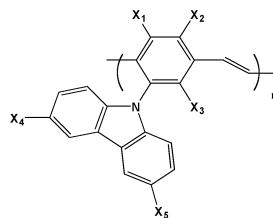
가 ,

(cathode) (electron)가 (mechanism) (anode) (hole) (recombination) (exiton) , 가 (radiative decay) (band gap)

, π -
(electron transport layer)

PV) (long chain) 1 (p -) (P

1

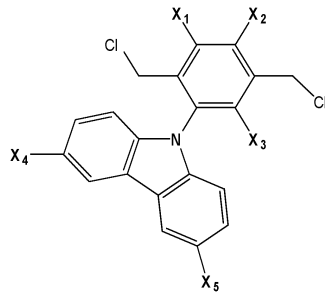


X_1, X_2, X_3, X_4 X_5 , 가 1~40 , 가 , 4~14
 , , 1 40
 .

	PPV
가	가

1,6 - 가	t - (1,6 - addition elimination)	2 (Gilch)	1,4 - (dehydrohalogenation)
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2



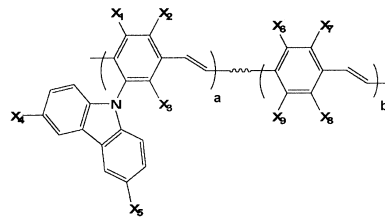
X_1 X_5 1 .

(Wittig condensation)

10,000 , (Mn)
10,000 1,000,000 , 가 1.5 5.0 .

1 PPV
3 .

3



X_1 X_9 , 가 1~40 , 가 , ,
1 40 4~14
, a b $0.1 \leq a/(a+b) \leq 0.9$.

PPV 2,5 - (2,5 - () - 1 - () - 4 - (2 -) (MEH - PPV)
(OC10C10 - PPV) .

PPV 1:99 ~ 99:1
MEH - PPV((1 - - 4 - (2 -) - 2,5 -))
, PPV (1 - - 4 - (1 -) - 2,5 -) , OC10C10 - PPV((1 - - 4 - (1 -) - 2,5 -)) .

ITO, (buffer layer)/
 (work function)가 Al, Al:Li Ca (buffer layer)/
 polythiophene), (polyaniline), (polyacetylene), (polypyrrole)
 LiF MgF₂

1: 1: 2 - (N -) - 5 - (2 -) - 1,4 - bis()
 2 - (N -) - 5 - (2 -) - 1,4 - bis() 1
 (1) 4 - - 2,5 -
 2,5 - 60g(4.4x10⁻¹ mol) CHCl₃ 600ml 0
 CCl₄ 200ml Br₂ 70.32g(4.4x10⁻¹ mol) 1 가
 7 NaOH 3
 89%(83.14g)

¹H - NMR (Acetone - d₆): δ 2.1(s, 3H, -CH₃), δ 2.3(s, 3H, -CH₃), δ 3.8(s, 3H, -OCH₃), δ 6.9(s, 1H, Ar - H), δ 7.2(s, 1H, Ar - H)

(2) 2 - - 5 -

(1) 4 - - 2,5 - 40.6g(1.9x10⁻¹ mol) KMnO₄ 300.28g(1.9
 mol) 2.5l 100 가 . 24 MnO₂
 5N HCl 가
 275 65%(33.72g)

¹H - NMR (Acetone - d₆): δ 3.0(s, 2H, -COOH), δ 4.0(s, 3H, CH₃O -), δ 7.5(s, 1H, Ar - H), δ 8.0(s, 1H, Ar - H)

(3) 2 - (N -) - 5 -

(2) 2 - - 5 - 10g(3.6x10⁻² mol), 12.04g(
 7x10⁻² mmol, 2eq), K₂CO₃ 12.94g(9.4x10⁻² mmol, 1.3eq) Cu 0.3g(3% w/w) 300ml DMF
 48
 5N HCl 가 CHCl₃
 50%(6.5g), 298

¹H - NMR (Acetone - d₆): δ 4.1(s, 3H, CH₃O -), δ 7.1(d, 2H, Ar - H), δ 7.2(t, 2H, Ar - H), δ 7.3(t, 2H, Ar - H), δ 7.8(s, 1H, Ar - H), δ 7.9(s, 1H, Ar - H), δ 8.1(d, 2H, Ar - H), δ 11.4(s, 2H, COOH)

(4) 2 - (N -) - 5 - -

(3) 2 - (N -) - 5 - 4.4g(1.2×10^{-2} mol) MeOH 300ml
 , SOCl₂ 17.46ml(2.4×10^{-1} mol) 1 가 12
 , NaHCO₃ 10% 가 .
 MeOH 91%(4.39g), 145 .

¹H - NMR (Acetone - d₆): δ 3.2(s, 3H, CO₂CH₃), δ 3.8(s, 3H, CO₂CH₃), δ 4.0(s, 3H, CH₃O -), δ 7.1(d, 2H, Ar - H), δ 7.2(t, 2H, Ar - H), δ 7.3(t, 2H, Ar - H), δ 7.7(s, 1H, Ar - H), δ 7.9(s, 1H, Ar - H), δ 8.2(d, 2H, Ar - H)

(5) 2 - (N -) - 5 - -

(4) 2 - (N -) - 5 - - 3.5g(8.9×10^{-3} mol)
 ol) CH₂Cl₂ 300ml 0 , CH₂Cl₂ BBr₃ 1M 17.8ml(1.8×10^{-2} mol) 가 . 4 , 10cm
 80 , 87%(2.91g) .

¹H - NMR (Acetone - d₆): δ 3.2(s, 3H, CO₂CH₃), δ 3.9(s, 3H, CO₂CH₃), 7.1(d, 2H, Ar - H), δ 7.2(t, 2H, Ar - H), δ 7.3(t, 2H, Ar - H), δ 7.6(s, 1H, Ar - H), δ 7.9(s, 1H, Ar - H), δ 8.2(d, 2H, Ar - H), δ 10.7(s, 1H, Ar - OH)

(6) 2 - (N -) - 5 - (2 -) -

(5) 2 - (N -) - 5 - - 2.91g(7.8×10^{-3} mol)
³mol) 300ml 2 - 3.0g(1.6×10^{-2} mol) K₂CO₃ 2.2g(1.6×10^{-2} mol)
 , 0.1g 24 .
 94%(3.6g) 138 .

¹H - NMR (Acetone - d₆): δ 0.9 - 1.0(m, 6H, - OCH₂CH(CH₂CHCH₃)CH₂CH₂CHCH₃), δ 1.4(m, 4H, - CH₂CH₂CH₂CH₂CH₃), δ 1.5 - 1.6(m, 4H, - OCH₂CH(CHCH₂CH₃)CHCH₂CH₂CH₂CH₃), δ 1.8(m, 1H, - OCH₂CH - CH -), δ 3.2(s, 3H, - CO₂CHCH₃), δ 3.8(s, 3H, - CO₂CHCH₃), δ 4.2(d, 2H, - OCHCH₂CH₂CH₂CH₃), δ 7.9(s, 1H, Ar - H), δ 7.1(d, 2H, Ar - H), δ 7.2(t, 2H, Ar - H), δ 7.3(t, 2H, Ar - H), δ 7.7(s, 1H, Ar - H), δ 8.1(d, 2H, Ar - H)

(7) 2 - (N -) - 5 - (2 -) - 1,4 - ()

300ml THF , LiAlH₄ 0.94g(2.5×10^{-2} mol) 가 (6)
 2 - (N -) - 5 - (2 -) - 4g(8.2×10^{-3} mol) THF 150ml
 I 가 . 4 0.9ml , 0.9ml 15% NaOH , 2.7ml
 가 .
 128 , 97%(3.4g) .

¹H - NMR (Acetone - d₆): δ 0.9 - 1.0(m, 6H, - OCH₂CH(CH₂CHCH₃)CH₂CH₂CHCH₃), δ 1.4(m, 4H, - CH₂CH₂CH₂CH₂CH₃), δ 1.5 - 1.6(m, 4H, - OCH₂CH(CHCH₂CH₃)CHCH₂CH₂CH₂CH₃), δ 1.8(m, 1H, - OCH₂CH - CH -), δ 4.0(d, 2H, - CHCH₂CH₂OH), δ 4.2(d, 2H, - CHCH₂CH₂OH), δ 4.1(t, 1H, - CH₂OH), δ 4.2(t, 1H, - CH₂OH), δ 4.7(d, 2H, - OCHCH₂CH₂CH₂CH₃), δ 7.0(d, 2H, Ar - H), δ 7.2(t, 2H, Ar - H), δ 7.3(t, 2H, Ar - H), δ 7.4(s, 1H, Ar - H), δ 8.2(d, 2H, Ar - H)

(8) 2 - (N -) - 5 - (2 -) - 1,4 - ()

2g(2.8×10^{-3} mol) (7) 2 - (N -) - 5 - (2 -) - 1,4 - () 1.
 mol) DMF 0.21ml(2.8×10^{-3} mol) 가 . 12 150ml POCl₃ 0.26ml(2.8×10^{-3}
 MgSO₄ .
 53%(0.7g) .

¹H - NMR (Acetone - d₆): δ 0.8 - 1.0(m, 6H, - OCH₂CH(CH₂CHCH₃)CH₂CH₂CHCH₃), δ 1.4(m, 4H, - CH₂CH₂CH₂CH₂CH₃), δ 1.5 - 1.7(m, 4H, - OCH₂CH(CHCH₂CH₃)CHCH₂CH₂CH₂CH₃), δ 1.8 (m, 1H, - OCH₂CH - CH -), δ 4.2(d, 2H, - OCHCH₂CH -), δ 4.4(s, 2H, - CHCH₂Cl), δ 4.8(s, 2H, - - CHCH₂Cl), δ 7.0(d, 2H, Ar - H), δ 7.2(t, 2H, Ar - H), δ 7.3(t, 2H, Ar - H), δ 7.4(s, 1H, Ar - H), δ 7.5(s, 1H, Ar - H), δ 8.2(d, 2H, Ar - H)

2 2: [2 - (N -) - 5 - (2 -) - 1,4 -]

1 (8) 2 - (N -) - 5 - () - 1,4 - () 0.5g (
 1.0×10^{-3} mol) 100ml , THF 50ml
 0 , 1N (CH₃)₃COK 3ml(3.0×10^{-3} mol) 20 가 . 0 2
 t - 1 1 .
 300ml MeOH . 45%(0.17g) .

¹H - NMR (CDCl₃): δ 0.83 - 1.92(m, 15H, - CH(CH₂CH₃)CH₂CH₂CH₃), δ 3.98(m, 2H, - OCH₂CH -), δ 6.58(d, 2H, - CH=CH -), δ 6.77~7.26 (m, 8H, Ar - H), δ 7.89(d, 2H, Ar - H)

1: 1:

(1)

2 PL (photoluminescenc spectrum) UV
 326, 340, 461 nm , PL 320, 340, 400, 420nm 4 . UV 540
 nm .

(2)

TGA(Thermogravimetric analysis) DSC(Differential Scanning Calorimetry)
 10 /min . 5 (가) () . TGA
 (thermogram) 400 가 가 430 가
 가 . , DSC Tg 196 , Tm .

2: 2: (EL device)

2 . ITO(indium - tin oxide)가
 20 IPA() , IPA .
 PEDOT 25nm , 2 0.5wt%
 ITO 80nm . 2200rpm 5
 0 80 1 .
 50nm 200nm .
 6 .

[ITO/PEDOT/ /Ca/Al]
 (forward bias voltage)
 m 2.2V 7
 3,700cd/m² 2mm² 534nm
 10V 3

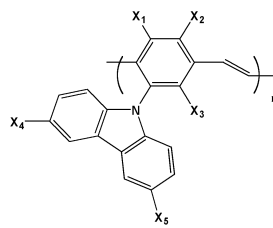
(p -) (PPV) 1
 , 가 ,

(57)

1.

1

[1]

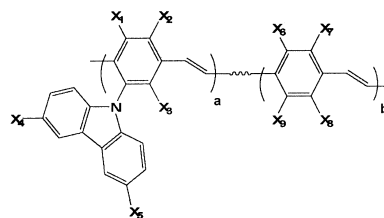


X₁, X₂, X₃, X₄ X₅ , 가 1~40 , 가 , 4~14
 , , 1 40

2.

1 PPV , 3 .

[3]



X_1, X_9 , 가 1~40 , 가 , ,
 $1 \sim 40$, 4~14
 $a, b \quad 0.1 \leq a/(a+b) \leq 0.9$.

3.

2 , PPV 가 2,5 - () - 4 - (2 -) ()
 $-1-$ - 4 - .

4.

1 PPV 가 1:99 ~ 99:1 .

5.

4 , PPV 가 (1 - - 4 - (2 -) - 2,5 - (2 -))
 $(1 - - 4 - (1 -) - 2,5 -)$.

6.

1 2 , 10,000 1,000,000 , 가 1.5 5.
 0 .

7.

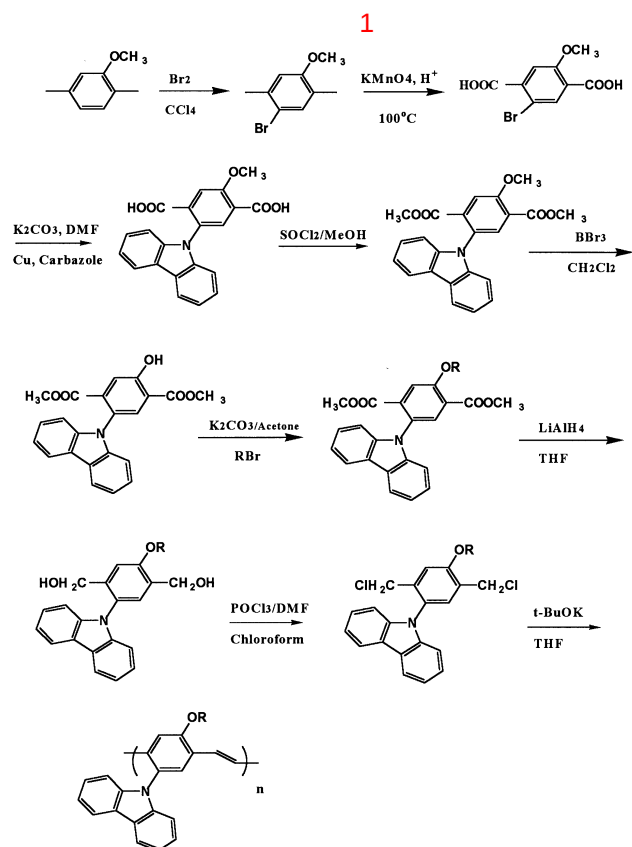
$/$ $/$, $/$ $/$ $/$, $/$ $/$ $/$ $/$ $/$ $/$, $/$ $/$ $/$ $/$ $/$ $/$
 가 , 1 2 4 .

8.

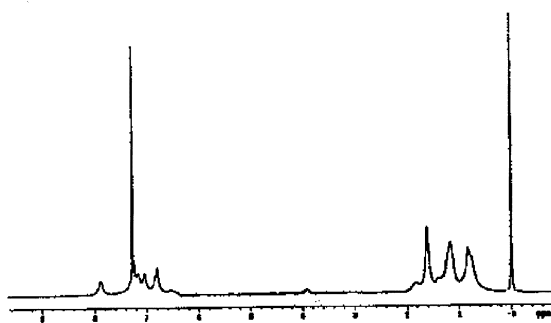
7 , (polythiophene), (polyaniline), (polyacetylene),
 ne), (polypyrrole) .

9.

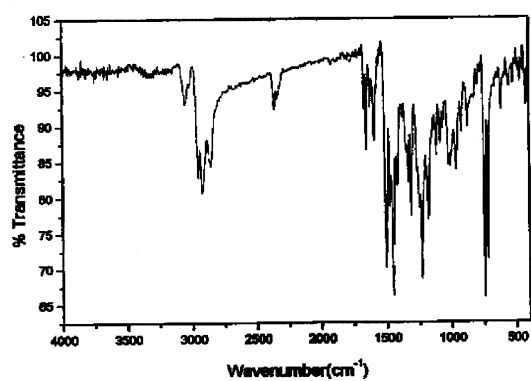
7 , LiF MgF₂ .



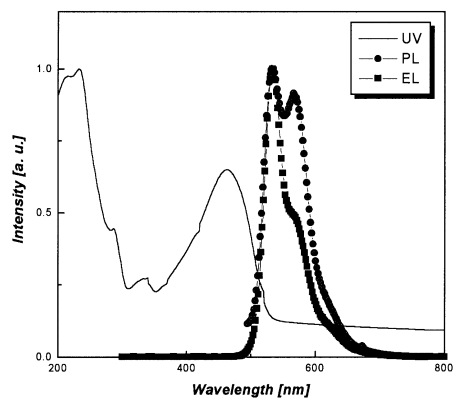
2



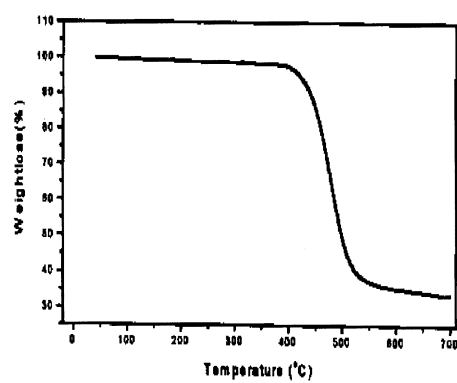
3



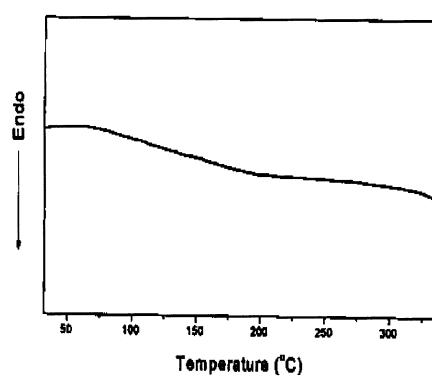
4



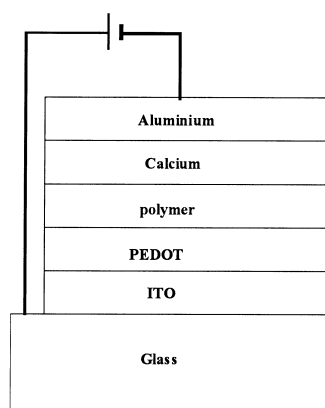
5a



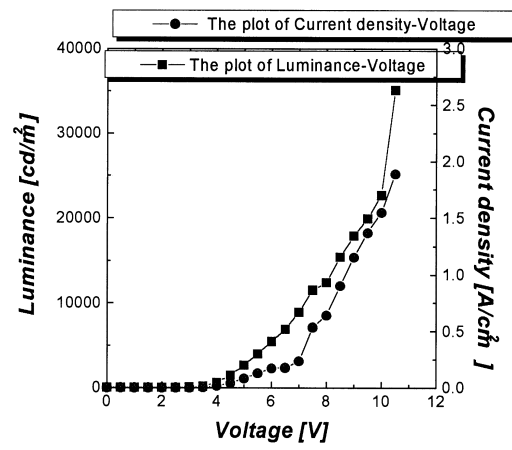
5b



6



7



专利名称(译)	具有改善的电荷供应平衡的电致发光聚合物和使用其的电致发光装置		
公开(公告)号	KR1020020036018A	公开(公告)日	2002-05-16
申请号	KR1020000065866	申请日	2000-11-07
申请(专利权)人(译)	三星SD眼有限公司		
当前申请(专利权)人(译)	三星SD眼有限公司		
[标]发明人	SOHN BYUNG HEE 손병희 LEE KWANG YEON 이광연 JIN JUNG IL 진정일 KIM KYUNG KON 김경곤 HONG YOUNG RAE 홍영래		
发明人	손병희 이광연 진정일 김경곤 홍영래		
IPC分类号	H01L51/50 H01L51/30 H05B33/10 C09K11/06 C08G61/02 H01L51/00		
CPC分类号	H01L51/5012 H01L51/0043 H01L51/0037 Y10S428/917 H01L51/0038 C09K11/06		
代理人(译)	LEE , YOUNG PIL		
其他公开文献	KR100379810B1		
外部链接	Espacenet		

摘要(译)

本发明涉及增加电荷传输平衡的电致发光聚合物和由电致发光元件表示的电致发光聚合物，更具体地应用于化学式1以下和应用该电致发光元件的电致发光元件，提供应用本发明的电子器件。具有优异光发射率的电致发光聚合物适合电荷的供应平衡。[化学式1]在上式中，X₁，X₂，X₃，X₄和X₅可以分别为氢，其中碳数为1~40的脂肪族烷基，种兰烷基，环状烷基，烷氧基和甲硅烷基，以及1~40个碳原子数的烷氧基或胺是取代或未取代的4~14个碳原子数的芳香族基团。电致发光聚合物，电子平衡供应，咔唑基团，光发射率，电致发光元件。

