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2002 04 15

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(22)

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2000 10 06

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575

(72)

APT106 - 1602

APT206 - 905

2 393 APT403 - 64

1 134 - 3 9 5

401 - 2 9 4

(74)

:

(54)

1

[3, 2 - b]

.

,

1

[3,2 - b]

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,

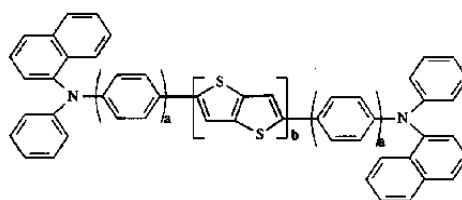
1

.

[3,2 - b]

.

1



, a 1 20 , b 1 20 .

1

EL,

1 [3,2 - b]

2	3 -	- 2 -	(3 - bromothiophene - 2 - carbaldehyde)
¹ H - NMR			
3	[3,2 - b]	- 2 -	(ethylthieno[3,2 - b]thiophene
- 2 - carboxylate)			
¹ H - NMR			
4	[3,2 - b]	- 2 -	(thieno[3,2 - B]thiophene - 2 - carbox
ylic acid)			
¹ H - NMR			
5	[3,2 - B]	(thieno[3,2 - b]thiophene)	¹ H - NMR
6	2,5 -	[3,2 - b]	(2,5 - dibromothieno[3,2 - b]thiophene)
¹³ C - NMR			¹ H - NMR 13
7	[3,2 - b]	- 2 -	(thieno[3,2 - b]thophene - 2 - carboxy
lic acid)			
FT - IR			
8	2,5 -	[3,2 - b]	(2,5 - dibromothiophene[3,2 - b]thiophene)
(DCS)			

[]

(EL Display) (OELD) ,

[]

가 가

(Cathode Ray Tube: CRT), (Electroluminescence Display: ELD), (Light Emitting Diode: LED), (Plazma Display Panel: PDP) , (Liquid Crystal Display: LCD) .

가 , 가 (back light) , 가 가 가

가 200V , 가 가 , 1987 (Eastman Kodak) 15V 1,000 (alumina quinone) π -

(EL) 가 EL

가 EL (256 × 64 ,) 2 가 1996 (full color) EL (pioneer) (Idemitsu) , NEC

가 (quantum efficiency)

가 2 3 p - n -

가 ITO(Indium Tin Oxide) p-
가 ITO ,

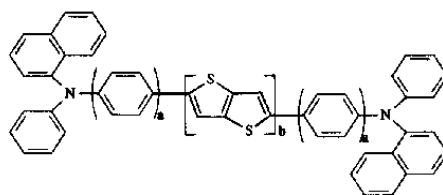
가 가 .

가 p-
가

(Tg)가

1 [3, 2 - b]

1



, a 1 20 , b 1 20 .

, 1 [3,2 - b]

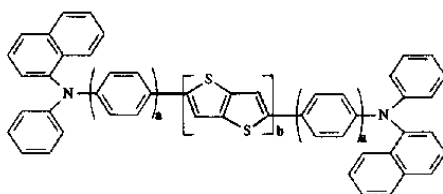
, 1

(OLED; Organic light emitting device)

가

1 , 가 .

1



a 1 20 , b 1 20 , a 1 6 , b 1 6 .

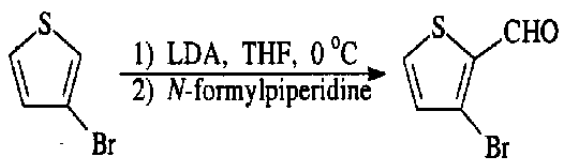
, 2

ITO [3,2 - b] 가

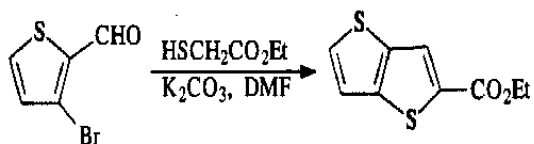
1
(Tg)가 , 가 .

1 [3,2 - b] 1 4 .

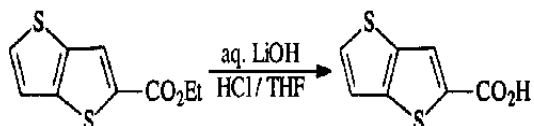
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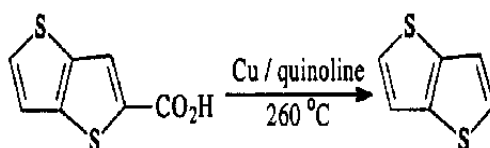
2



3



4



1 (amide; LDA) , 3 - (3 - bromothiophene) (lithium diisopropylamide; LDA) , 3 - - 2 - (3 - bromothiophene - 2 - carbaldehyde) .
- 5 5

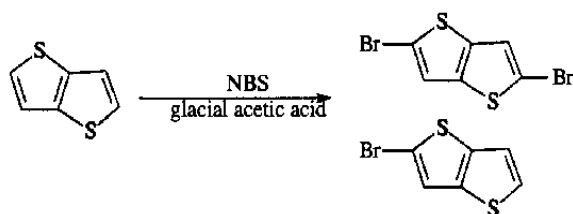
3 - (potassium carbonate) - 2 - N,N - (N,N - dimethylformamide),
2 (te) [3,2 - b] - 2 - (ethyl 2 - sulfanylacetate)
(te) (ethyl thieno[3,2 - b]thiophene - 2 - carboxylate)

60

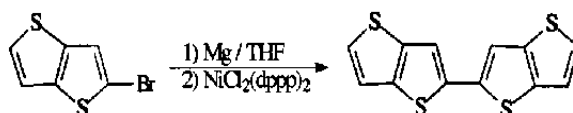
84

[3,2 - b] - 2 - (THF) [3,2 - b] - 2 -
(lithium hydroxide) 4 (thieno[3,2 - b]thiophene - 2 - carboxylic acid) 4 [3,2 - b] (quinoline)

5



6



, [3,2 - b] 5 6 N -
(N - bromosuccinimide) 2,5 - [3,2 - b] (2,5 - bromothiopheno[3,2 - b]thioph
ene), 2,5 - [3,2 - b] 4,4 - - (4,4
- dibromobiphenyl), () (tris(dibenzylideneacetone)dipalladium), 1,1' -
() (1,1' - Bis(diphenylphosphino)ferrocene)
- t - (sodium - t - butoxide) N - (2 -) (N - (2 - naphthyl phenyl amine))
, 80 95

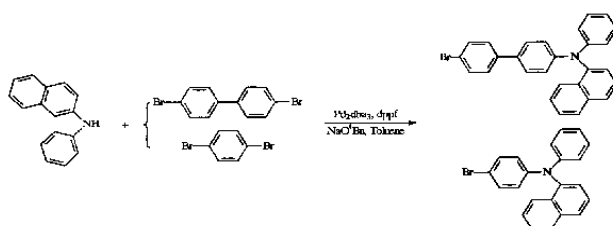
, 1 - - 4 - (2 -) (1 - bromo - 4 - (2 - naphthylphenylamine)biphenyl)
, 6 (THF) (grinard re
agent) , [1,3 - ()] () ([1,3 - bis(diphenylphosphino)
propane]nickel() chloride; Ni(dppp)Cl₂) 2,5 - [3,2 - b] (2,5 - dibromothiopheno[2,3 - b]
thiophene)
[3,2 - b] 가

[3,2 - b] 1 20 , 1 6 .

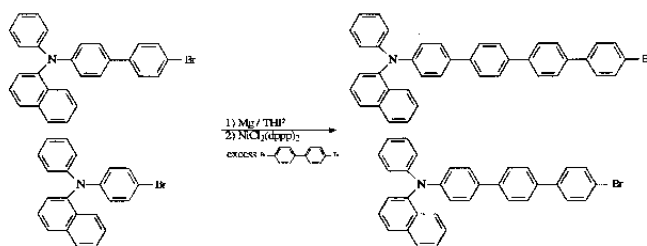
가 (Tg)가
7, 8 9

7, 8 9 N - (N - formylpiperidine) 6 [3,2 - b]

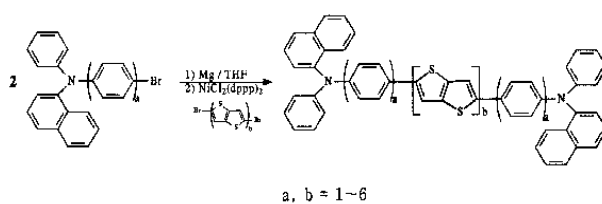
7



8



9



[3,2 - b]

[3,2 - b]

1 20

1 6

140

160

가

n - (n - butyllithium), (lithium hydroxide), (quinoline),
 , n - (n - bromosuccinimide), () (tris(dibenzylideneacet
 one)dipalladium), - t - (sodium - t - butoxide), 1,1' - () (1,1' - Bis(dip
 henylphosphino)ferrocene), 3 - (3 - bromothiophene) (Aldrich),
 (diisopropylamine), , N - (2 -) (N - (2 - naphthylphenylamine)

(Lancaster)

, 2 - (ethyl 2 - sulfanylacetate), 4,4 - (4,4 - dibromo - biphenyl)
 TCI, [1,3 - ()] () ([1,3 - bis(diphenylphosphino)
 propane]nickel() chloride), N - (N - formylpiperidine) (Acros)

N,N - (N,N - Dimethyl formamide; DMF),
 (Methylene chloride), (hydrochloric acid),

1H - NMR 13C - NMR, FT - IR 1H - NMR Bruker A
 M - 200, 300 IR (Perkin - Elmer Spectrometer) KBr
 951 TGA 910S DSC Dupont 990

3 - - 2 - (3 - Bromothiophene - 2 - carbaldehyde)

0 THF 450 M (butyllithium) 2.5 M 98 M (245.3 mmol) (diis
 opropylamine) 40 g(245.3 mmol) 30 N - (N - formylpiperidine) 27.763
 g(245.3 mmol) 가 4 TLC 20 % (a
 mmonium chloride) (rotary evaporator)
 76 %

1H - NMR: δ H 7.11 (1H, d, H - 4), 7.69 (1H, d, H - 5), 9.92 (1H, s, CHO) (2).

[3,2 - b] - 2 - (ethyl thieno[3,2 - b]thiophene - 2 - carboxylate)

3 - - 2 - N,N - (N,N - dimethylamide) 220 M
 21.939 g(158.74 mmol), 2 - (ethyl 2 - sulfanylacetate) 14.271 g(118.76 mmol)
 72
 (MgSO⁴)
 84 %

1H - NMR: δ H 1.37 (3H, t, Me), 4.34 (2H, q, CH²), 7.24 (1H, d, H - 6), 7.55 (1H, d, H - 5), 7.97 (1H, s,
 H - 3) (3).

[3,2 - b] - 2 - (thieno[3,2 - b]thiophene - 2 - carboxylic acid)

THF 100 Mℓ (lithium hydroxide) 1.0 M 10 Mℓ, [3,2 - b] - 2 -
 10 g(47.108 mmol) 4 TLC . (hydr
 ochloric acid) 200 Mℓ , . [3,2 - b]
 - 2 - , 221 222 . 93 % .

¹H - NMR: δ H 7.50 (1H, d, H - 6), 7.91 (1H, d, H - 5), 8.09 (1H, s, H - 3)(4).

[3,2 - b] (thieno[3,2 - b]thiophene)

140 Mℓ [3,2 - b] - 2 - 17.494 g(94.994 mmol) 3.018 g(47.496
 mmol) 240 가 가
 , 2 가 , 1.0 M
 . (petroleum ether)
 55 56 . 72 % .

¹H - NMR: δ H 7.25 (2H, d, H - 3/6), 7.37 (2H, d, H - 2/5)(5).

2,5 - [3,2 - b] (2,5 - dibromothieno[3,2 - b]thiophene)

3 : 7 [3,2 - b] 7.422 g(52.957 mmol) , N -
 (N - bromosuccinimide) 18.852 g(105.913 mmol) 24 .
 (MgSO₄)
 . 78 % .

¹H - NMR: δ H 7.49 (2H, s, H - 3/6)(6).

1 - - 4 - (2 -) (1 - bromo - 4 - (2 - naphthylphenylamine)biphenyl)

30 Mℓ 4,4 - - (4,4 - dibromo - biphenyl) 10 g(32.051 mmol),
 () (0) (Tris(dibenzylideneacetone)dipalladium(0)) 0.294 g(0.321 mmol), 1,
 1' - () (1,1 - bis(diphenylphosphino)ferrocene) 0.267 g(0.482 mmol)
 15 . - t - (sodium - t - butoxide) 1.540 g(16.026 mmol) N - (2 -
)(N - (2 - naphthylphenylamine)) 2.811 g(12.821 mmol) 90 16
 . 가
 . 68 % .

[3,2 - b]

1 - - 4 - (2 -) 5.439 g(12.076 mmol) 0.331 g(13.613 mmol) T
 HF 45 Mℓ (grinard reagent) . [1,3 - ()]
] () (1,3 - bis(diphenylphosphino)propane]nickel()chloride; Ni(dppp)Cl₂ 0.095 g(0.17
 6 mmol) 2,5 - [3,2 - b] 1.328 g(5.489 mmol) 2 .
 48 . 0.2
 M HCl .

150

1 ITO(1) ITO
 a - CuPc (buffer) (2) (buffer) alph

ITO(1) (IPA),
 2×10^{-6} torr 20 nm 10
 0 nm

Alq3(5) Alq3 [3,2 - b] (3) 350
 6(4) 400
 LiF(6) (0.5 nm) (> 100 nm)(7)
 (OLED)

1 (400) (ITO/CuPc/
 cd/A 12 cd/A /Alq3/Al) - 15
 20 %

NPB
 12 cd/A

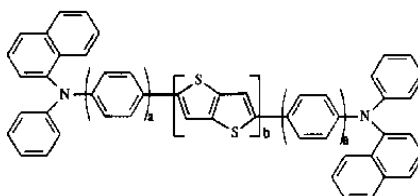
(Tg)가
 가 , ITO 가
 가 [3,2 - b] 가
 가

(57)

1.

1 [3, 2 - b] :

1



, a 1 20 , b 1 20 .

2.

1 ,

가 140 160 .

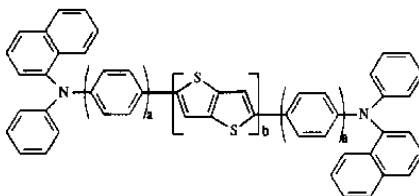
3.

- a) 3 - (3 - bromothiophene) (lithium diisopropylamide) 3 -
- 2 - ;
- b) 3 - - 2 - N,N - (N,N - dimethylformamide),
2 - (ethyl 2 - sulfanylacetae) [3,2 - b] -
2 - (ethyl thieno[3,2 - b]thiophene - 2 - carboxylate) ;
- c) b) [3,2 - b] - 2 -
[3,2 - b] ;
- d) c) [3,2 - b] N - (N - bromosuccinimide)
2,5 - [3,2 - b] ;
- e) d) 2,5 - [3,2 - b] 4,4 - - (4,4 - dibromobiphenyl),
() (tris(dibenzylideneacetone)dipalladium) 1,1' - ()
(1,1' - bis(diphenylphosphino)ferrocene) , - t - (sodium - t - bu
toxide) N - (2 -) (N - (2 - naphthylphenyl amine)) 1 - - 4 - (2 -
) (1 - bromo - 4 - (2 - naphthylphenylamine)) ;
- f) e) 1 - - 4 - (2 -) [1,3 - ()] ()
([1,3 - bis(diphenylphosphino)propane]nickel()chloride) d) 2,5 -
[3,2 - b] 가 ;
- g) f) [3,2 - b] 가 3 20 ;
- h) f) [3,2 - b] N - (N - formylpiperidine) ;
- i) h) 가 2 20

1 [3, 2 - b]

:

1



, a 1 20 , b 1 20 .

4.

4 ,

1 a 1 6 , b 1 6 .

5.

4 ,

b) 60 84 .

6.

4 ,

e) 가 80 95 .

7.

1 1 [3,2 - b] .

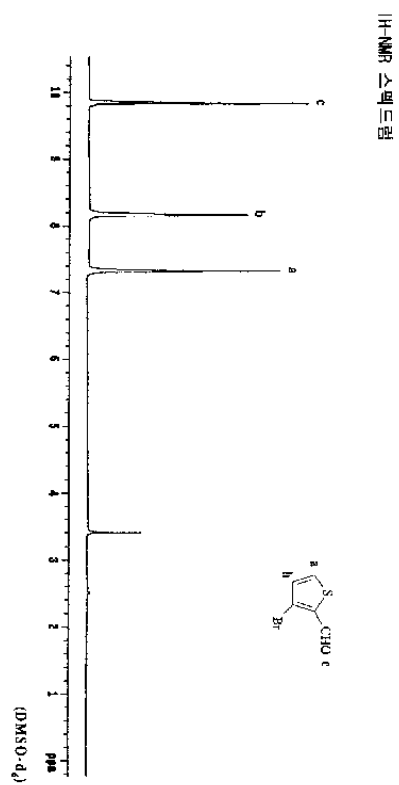
8.

1 1 [3,2 - b]

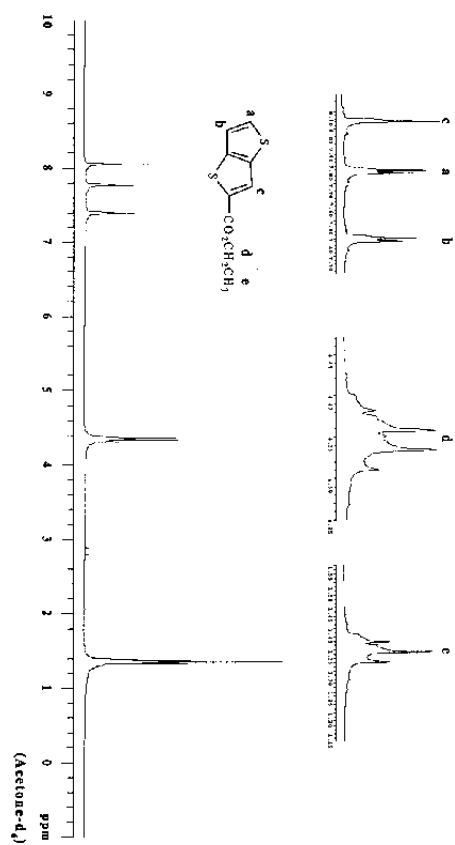
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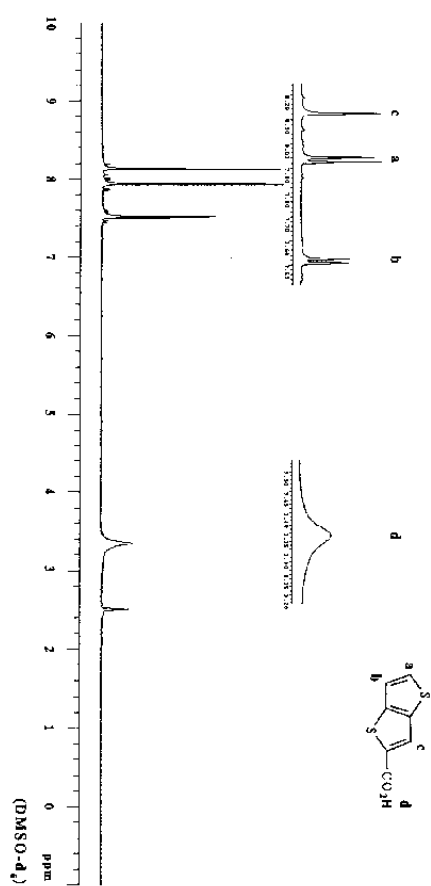
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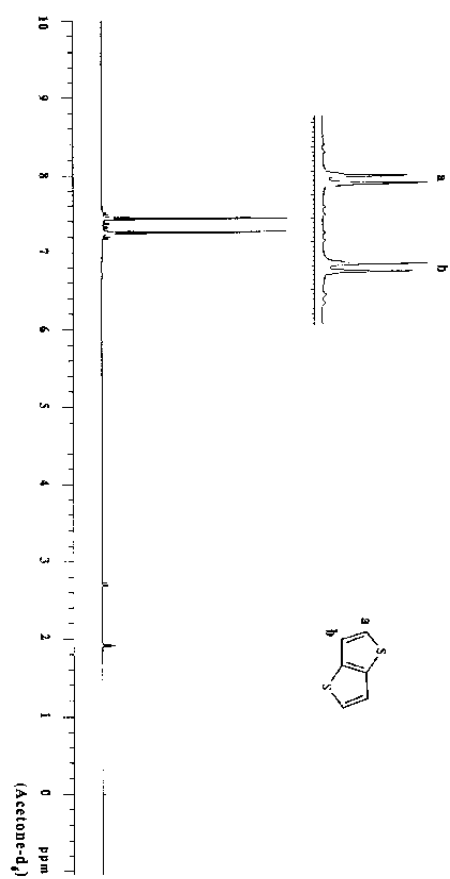
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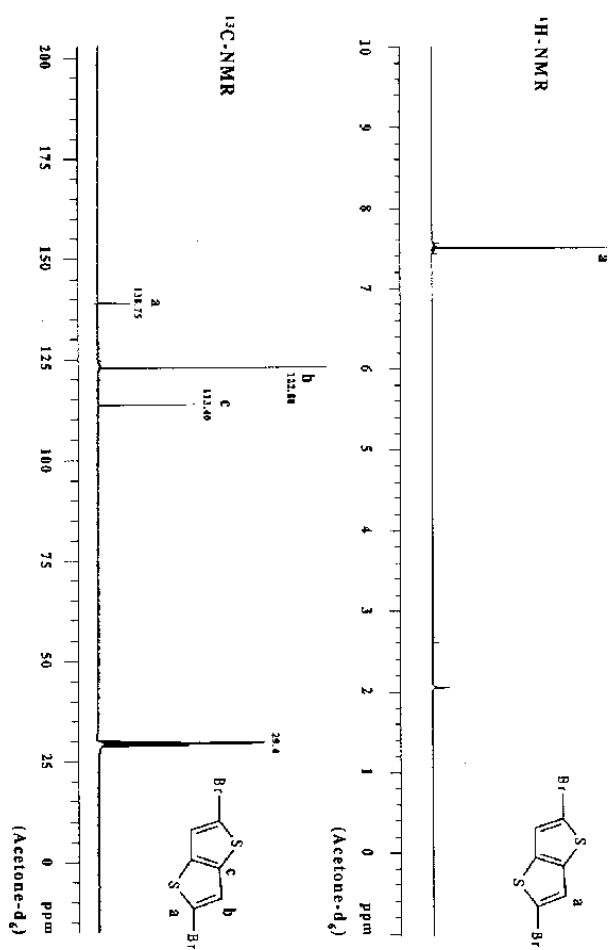
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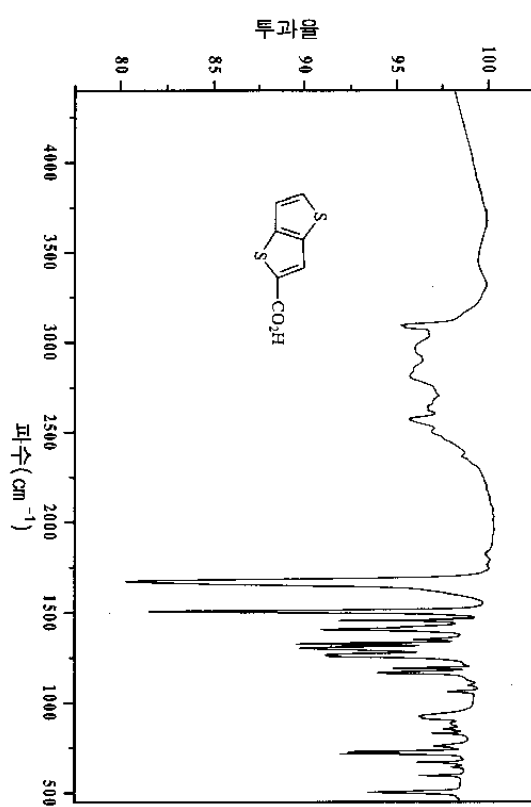
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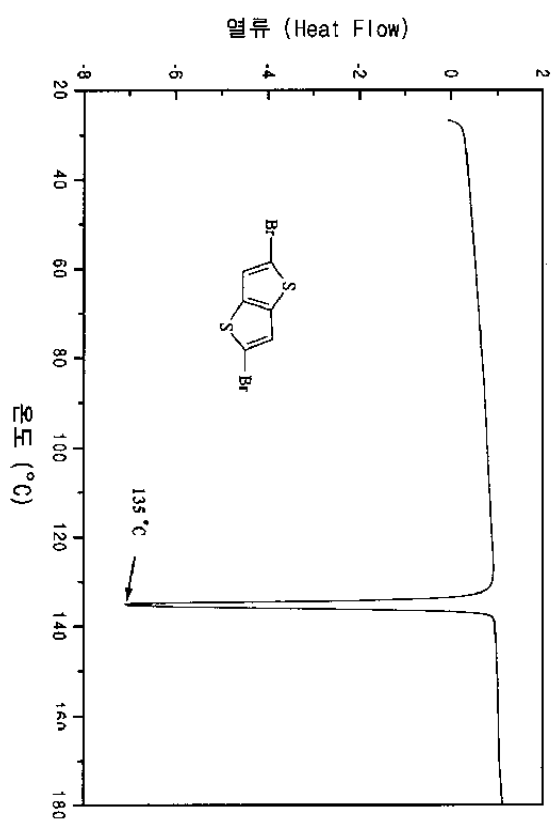
c



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8



专利名称(译)	用于空穴传输的化合物和使用其的有机电致发光器件		
公开(公告)号	KR1020020027935A	公开(公告)日	2002-04-15
申请号	KR1020000058743	申请日	2000-10-06
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	KIM SUNGHAN 김성한 YU HANSUNG 유한성 KIM HWANKYU 김환규 OH DONGJU 오동주 PAIK KYUNGLIM 백경림		
发明人	김성한 유한성 김환규 오동주 백경림		
IPC分类号	C09K11/06		
CPC分类号	C08G61/126 C08G2261/3223 C09K11/06 C09K2211/1416 C09K2211/1433 C09K2211/1458 H01L51/0036 H01L51/5056 H05B33/14 Y10S428/917		
代理人(译)	PARK, 常树		
其他公开文献	KR100560776B1		
外部链接	Espacenet		

摘要(译)

本发明提供含有如下化学式1所示的噻吩并[3,2-b]噻吩的空穴传输用化合物。另外, 本发明提供使用噻吩并[3, ...的空穴传输材料]。 2-b]噻吩表示如下化学式1.此外, 本发明提供有机电致发光显示装置, 其包含用于空穴传输的化合物, 其使用用于电致发光器件的低分子量发光的化合物, 表示如下化学式在本发明中, 可以提供使用所提供的噻吩并[3,2-b]噻吩制造具有优异的热性能和发光效率的有机电致发光显示装置。化学式1化学式中的A可以是b为1至20, 其为1至20.有机EL, 用于空穴传输的化合物和发光器件。

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