



(12) **EUROPEAN PATENT APPLICATION**

(88) Date of publication A3:
27.06.2007 Bulletin 2007/26

(51) Int Cl.:
H05B 33/14 (2006.01) **C08F 38/00** (2006.01)
C09K 11/06 (2006.01)

(43) Date of publication A2:
28.03.2007 Bulletin 2007/13

(21) Application number: **06019652.4**

(22) Date of filing: **27.04.2001**

(84) Designated Contracting States:
AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE TR
Designated Extension States:
AL LT LV MK RO SI

(30) Priority: **27.04.2000 JP 2000128364**
22.09.2000 JP 2000288692
24.04.2001 JP 2001125359

(62) Document number(s) of the earlier application(s) in accordance with Art. 76 EPC:
01303861.7 / 1 158 839

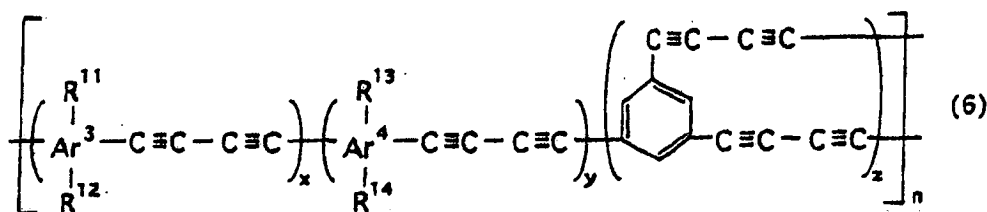
(71) Applicant: **Fujitsu Ltd.**
Kawasaki-shi, Kanagawa 211-8588 (JP)

(72) Inventors:
• **Yoshikawa, Kota**
Fujitsu Limited
Kawasaki-shi
Kanagawa 211-8588 (JP)
• **Kijima, Masashi**
Tsukuba-shi
Ibaraki (JP)
• **Shirakawa, Hideki**
Yokohama-shi
Kanagawa (JP)
• **Kinoshita, Ikuo**
Tsukuba-shi
Ibaraki (JP)

(74) Representative: **Fenlon, Christine Lesley**
Haseltine Lake
Lincoln House
300 High Holborn
London WC1V 7JH (GB)

(54) **Organic luminous material and organic light-emitting device**

(57) An organic luminous material having the general formula



where Ar³ denotes a first arylene group, Ar⁴ denotes a second arylene group, R¹¹, R¹², R¹³ and R¹⁴ are substituents which can be the same or different or some of which can be the same and other(s) different, x, y, z denote copolymerization ratios and n denotes the degree of polymerisation.



European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 06 01 9652

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	T. OGAWA: "Diacetylenes in polymer systems" PROG. POLYM. SCI., vol. 20, 1995, pages 943-985, XP002415751 * the whole document *	1-14,17,18	INV. H05B33/14 C08F38/00 C09K11/06
X	X.T. TAO ET.AL.: "Novel main-chain poly-carbazoles as hole and electron transport materials in polymer light-emitting diodes" APPL. PHYS. LETT., vol. 71, no. 14, 1997, pages 1921-1923, XP002339411 * the whole document *	5-14,17,18	
X	DE 43 39 646 A1 (BASF AG, 67063 LUDWIGSHAFEN, DE) 24 May 1995 (1995-05-24) * the whole document *	5-14	
X	REMMERS M ET AL: "THE OPTICAL, ELECTRONIC, AND ELECTROLUMINESCENT PROPERTIES OF NOVELPOLY(P-PHENYLENE)-RELATED POLYMERS" MACROMOLECULES, AMERICAN CHEMICAL SOCIETY. EASTON, US, vol. 29, no. 23, 4 November 1996 (1996-11-04), pages 7432-7445, XP000631108 ISSN: 0024-9297 * the whole document *	5-14	TECHNICAL FIELDS SEARCHED (IPC) C09K H05B C08F
A	EP 0 243 807 A (CELANESE CORPORATION) 4 November 1987 (1987-11-04) * the whole document *	1-4	
----- -/--			
7 The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 19 January 2007	Examiner Doslik, Natasa
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

EPO FORM 1503 03.82 (P04C01)



European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 06 01 9652

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	PATENT ABSTRACTS OF JAPAN vol. 016, no. 273 (C-0953), 18 June 1992 (1992-06-18) & JP 04 068002 A (ASAHI CHEM IND CO LTD), 3 March 1992 (1992-03-03) * the whole document *	1-4	
A	----- YANG M ET AL: "Characterization and fluorescence properties of thiophene-modified pi-conjugated nickel poly-yne polymers" POLYMER, ELSEVIER SCIENCE PUBLISHERS B.V, GB, vol. 40, no. 11, May 1999 (1999-05), pages 3203-3209, XP004157673 ISSN: 0032-3861 * the whole document *	5-14	
A	----- HOLZER W ET AL: "Excitation intensity-dependent fluorescence behaviour of some luminescent polymers" POLYMER, ELSEVIER SCIENCE PUBLISHERS B.V, GB, vol. 39, no. 16, July 1998 (1998-07), pages 3651-3656, XP004120980 ISSN: 0032-3861 * the whole document *	5-14	
A	----- T. HATTORI ET.AL.: "Photoinduced absorption and luminescence in polydiacetylenes" J.PHS.C: SOLID STATE PHYS., vol. 17, 1984, pages L881-L888, XP002339413 * the whole document *	5-14	
----- The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (IPC)
Place of search Munich		Date of completion of the search 19 January 2007	Examiner Doslik, Natasa
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

7
EPO FORM 1503 03 82 (P04C01)



European Patent
Office

Application Number

EP 06 01 9652

CLAIMS INCURRING FEES

The present European patent application comprised at the time of filing more than ten claims.

- ☐ Only part of the claims have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims and for those claims for which claims fees have been paid, namely claim(s):
- ☐ No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims.

LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

see sheet B

- ☐ All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.
- ☐ As all searchable claims could be searched without effort justifying an additional fee, the Search Division did not invite payment of any additional fee.
- ☐ Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid, namely claims:
- ☒ None of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims, namely claims:

see annex



The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

1. claims: 1-4

An organic luminous material made of a polymer of formula (6).

1.1. claims: 5-14

Organic light-emitting device comprising a lower electrode, a luminous layer made of a polymer of formula (1) and an upper electrode.

1.2. claims: 17,18

An organic luminous material made of a polymer of formula (4).

2. claims: 15,16

An organic luminous material made of a polymer of formula (3).

3. claims: 19-21

An organic luminous material made of a polymer of formula (5).

Please note that all inventions mentioned under item 1, although not necessarily linked by a common inventive concept, could be searched without effort justifying an additional fee.

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 06 01 9652

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

19-01-2007

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
DE 4339646	A1	24-05-1995	NONE	
EP 0243807	A	04-11-1987	JP 62256808 A US 4703096 A	09-11-1987 27-10-1987
JP 04068002	A	03-03-1992	NONE	

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

专利名称(译)	有机发光材料和有机发光器件		
公开(公告)号	EP1768465A3	公开(公告)日	2007-06-27
申请号	EP2006019652	申请日	2001-04-27
[标]申请(专利权)人(译)	富士通株式会社		
申请(专利权)人(译)	富士通.		
当前申请(专利权)人(译)	富士通.		
[标]发明人	KIJIMA MASASHI SHIRAKAWA HIDEKI KINOSHITA IKUO		
发明人	YOSHIKAWA, KOTA FUJITSU LIMITED KIJIMA, MASASHI SHIRAKAWA, HIDEKI KINOSHITA, IKUO		
IPC分类号	H05B33/14 C08F38/00 C09K11/06 H01L51/50 C08G61/02 H01L51/30		
CPC分类号	C08F38/00 C08G61/02 C09K11/06 C09K2211/1092 C09K2211/1425 H01L51/0035 H01L51/0043 H01L51/5012 Y10S428/917		
优先权	2000128364 2000-04-27 JP 2000288692 2000-09-22 JP 2001125359 2001-04-24 JP		
其他公开文献	EP1768465A2 EP1768465B1		
外部链接	Espacenet		

摘要(译)

具有通式的有机发光材料，其中Ar₃表示第一亚芳基，Ar₄表示第二亚芳基，R₁₁，R₁₂，R₁₃和R₁₄是可以相同或不同的取代基，或者它们中的一些可以是相同的和其它的(s)不同，x，y，z表示共聚比，n表示聚合度。

