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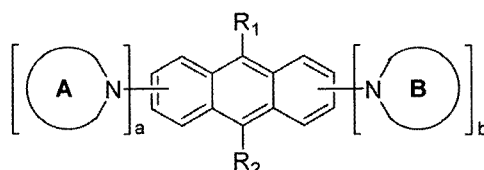
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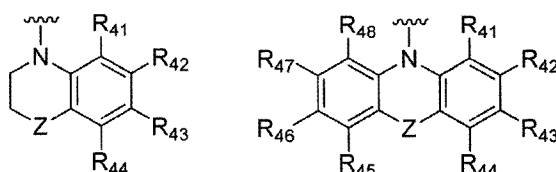
(54) **Novel organic electroluminescent compounds and organic electroluminescent device using the same**

(57) Provided are novel organic electroluminescent compounds **characterized in that** they are represented by Chemical Formula (1):

Chemical Formula 1



wherein, ring A and ring B independently represent a saturated 5- or 6-membered heterocyclic amino group, or a substituent selected from the following structures:



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wherein the saturated 5- or 6-membered heterocyclic amino group may further comprise one or more heteroatom(s) selected from NR_{36} , O and S; and
a and b independently represent an integer from 0 to 4, provided that (a + b) is an integer from 1 to 4.



EUROPEAN SEARCH REPORT

Application Number
EP 09 15 5969

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	US 2008/122344 A1 (SHIN DONG-WOO [KR] ET AL) 29 May 2008 (2008-05-29) * page 4, paragraph [0036], page 5, Formula 10, page 9, paragraph [0054], claims *	1-8	INV. C09K11/06 H01L51/50 H05B33/14
X	WO 2007/061181 A (LG CHEMICAL LTD [KR]) 31 May 2007 (2007-05-31) * page 19, compound (3-6), page 20, paragraphs [100] to [103], claims *	1-9	
X	WO 2007/102683 A (LG CHEMICAL LTD [KR]) 13 September 2007 (2007-09-13) * page 1, paragraph [4], page 32, Formulae 1-210 to 1-212, page 37, paragraph [108], claims *	1-9	
X	JP 2006 248900 A (SONY CORP) 21 September 2006 (2006-09-21) * page 11, compounds 1-8, paragraphs [0050] to [0061], Examples, claims *	1-8	
X	JP 2007 015933 A (SONY CORP) 25 January 2007 (2007-01-25) * page 9, compounds 1-10, paragraphs [0052] to [0063], Examples, claims *	1-8	C09K H01L H05B
E	EP 2 103 666 A2 (GRACEL DISPLAY INC [KR]) 23 September 2009 (2009-09-23) * page 15, compound 6, page 16, compound 16, page 18, compound 34, page 19, compound 44, claims *	1-9	
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 20 January 2010	Examiner Nemes, Csaba A.
<p>CATEGORY OF CITED DOCUMENTS</p> <p>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</p> <p>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</p>			

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EPO FORM 1503 03.82 (P04C01)



Application Number

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CLAIMS INCURRING FEES

The present European patent application comprised at the time of filing claims for which payment was due.

☐ Only part of the claims have been paid within the prescribed time limit. The present European search report has been drawn up for those claims for which no payment was due 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 those claims for which no payment was due.

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:

☐ The present supplementary 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 (Rule 164 (1) EPC).

**LACK OF UNITY OF INVENTION
SHEET B**

Application Number

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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: 1-8

Organic electroluminescent compound represented by Chemical Formula 2, organic electroluminescent device comprising an organic layer comprising said compound.

2. claims: 1-8

Organic electroluminescent compound represented by Chemical Formula 3, organic electroluminescent device comprising an organic layer comprising said compound.

3. claims: 1-8

Organic electroluminescent compound represented by Chemical Formula 4, organic electroluminescent device comprising an organic layer comprising said compound.

4. claims: 1-8

Organic electroluminescent compound represented by Chemical Formula 5, organic electroluminescent device comprising an organic layer comprising said compound.

5. claim: 9

Organic solar cell comprising an organic electroluminescent compound represented by Chemical Formula 1.

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

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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.

20-01-2010

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
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WO 2007061181 A	31-05-2007	CN 101263212 A	10-09-2008
		EP 1943323 A1	16-07-2008
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		KR 20090100530 A	24-09-2009
		US 2009273277 A1	05-11-2009

专利名称(译)	新型机电致发光化合物和使用其的机电致发光器件		
公开(公告)号	EP2141214A3	公开(公告)日	2010-02-24
申请号	EP2009155969	申请日	2009-03-24
申请(专利权)人(译)	GRACEL显示增量.		
当前申请(专利权)人(译)	GRACEL显示增量.		
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IPC分类号	C09K11/06 H01L51/50 H05B33/14		
CPC分类号	C09K11/06 C07D219/14 C07D223/22 C07D223/24 C09K2211/1011 H01L51/0058 H01L51/5012 H05B33/14 Y02E10/549 Y02P70/521		
优先权	1020080060376 2008-06-25 KR		
其他公开文献	EP2141214A2		
外部链接	Espacenet		

摘要(译)

本发明提供新型机电致发光化合物，其特征在于它们由化学式(1)表示：其中，环A和环B独立地表示饱和的5-或6-元杂环氨基，或选自以下结构的取代基：其中饱和的5-或6-元杂环氨基可进一步包含一个或多个选自NR³⁶，O和S的杂原子；并且a和b独立地表示0至4的整数，条件是(a + b)是1至4的整数。

Chemical Formula 1

