

**PATENT COOPERATION TREATY**

**PCT**

**INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY**

(Chapter I of the Patent Cooperation Treaty)

(PCT Rule 44bis)

Applicant's or agent's file reference <b>IDK-1068-PCT</b>	<b>FOR FURTHER ACTION</b>		See item 4 below
International application No. <b>PCT/JP2011/003721</b>	International filing date ( <i>day/month/year</i> ) <b>29 June 2011 (29.06.2011)</b>	Priority date ( <i>day/month/year</i> ) <b>30 June 2010 (30.06.2010)</b>	
International Patent Classification (8th edition unless older edition indicated) <b>See relevant information in Form PCT/ISA/237</b>			
Applicant <b>IDEMITSU KOSAN CO.,LTD.</b>			

<p>1. This international preliminary report on patentability (Chapter I) is issued by the International Bureau on behalf of the International Searching Authority under Rule 44 bis.1(a).</p> <p>2. This REPORT consists of a total of 7 sheets, including this cover sheet.</p> <p>In the attached sheets, any reference to the written opinion of the International Searching Authority should be read as a reference to the international preliminary report on patentability (Chapter I) instead.</p>																								
<p>3. This report contains indications relating to the following items:</p> <table border="0"> <tr> <td><input checked="" type="checkbox"/></td> <td>Box No. I</td> <td>Basis of the report</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. II</td> <td>Priority</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. III</td> <td>Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. IV</td> <td>Lack of unity of invention</td> </tr> <tr> <td><input checked="" type="checkbox"/></td> <td>Box No. V</td> <td>Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</td> </tr> <tr> <td><input checked="" type="checkbox"/></td> <td>Box No. VI</td> <td>Certain documents cited</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. VII</td> <td>Certain defects in the international application</td> </tr> <tr> <td><input checked="" type="checkbox"/></td> <td>Box No. VIII</td> <td>Certain observations on the international application</td> </tr> </table> <p>4. The International Bureau will communicate this report to designated Offices in accordance with Rules 44bis.3(c) and 93bis.1 but not, except where the applicant makes an express request under Article 23(2), before the expiration of 30 months from the priority date (Rule 44bis .2).</p>	<input checked="" type="checkbox"/>	Box No. I	Basis of the report	<input type="checkbox"/>	Box No. II	Priority	<input type="checkbox"/>	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability	<input type="checkbox"/>	Box No. IV	Lack of unity of invention	<input checked="" type="checkbox"/>	Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement	<input checked="" type="checkbox"/>	Box No. VI	Certain documents cited	<input type="checkbox"/>	Box No. VII	Certain defects in the international application	<input checked="" type="checkbox"/>	Box No. VIII	Certain observations on the international application
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	Date of issuance of this report <b>12 February 2013 (12.02.2013)</b>
The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland	Authorized officer  <b>Yukari Nakamura</b>
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**PATENT COOPERATION TREATY**

**TRANSLATION**

From the  
INTERNATIONAL SEARCHING AUTHORITY

**PCT**

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

To:

Date of mailing (day/month/year)	<b>02.08.2011</b>
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Applicant's or agent's file reference <b>IDK-1068-PCT</b>
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<b>FOR FURTHER ACTION</b> See paragraph 2 below
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International application No. <b>PCT/JP2011/003721</b>	International filing date (day/month/year) <b>29.06.2011</b>	Priority date (day/month/year) <b>30.06.2010</b>
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International Patent Classification (IPC) or both national classification and IPC <b>C07D239/26 (2006.01) i, C09K11/06 (2006.01) i, H01L51/50 (2006.01) i</b>
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Applicant <b>IDEMITSU KOSAN CO., LTD.</b>
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1. This opinion contains indications relating to the following items:

- Box No. I Basis of the opinion
- Box No. II Priority
- Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- Box No. IV Lack of unity of invention
- Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- Box No. VI Certain documents cited
- Box No. VII Certain defects in the international application
- Box No. VIII Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/JP	Date of completion of this opinion	Authorized officer
Facsimile No.		Telephone No.

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/JP2011/003721

Box No. I      Basis of this opinion

1. With regard to the **language**, this opinion has been established on the basis of:
  - the international application in the language in which it was filed
  - a translation of the international application into \_\_\_\_\_, which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b)).
2.  This opinion has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43*bis*.1(a))
3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, this opinion has been established on the basis of a sequence listing filed or furnished:
  - a. (means)
    - on paper
    - in electronic form
  - b. (time)
    - in the international application as filed
    - together with the international application in electronic form
    - subsequently to this Authority for the purposes of search
4.  In addition, in the case that more than one version or copy of a sequence listing has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
5. Additional comments:

WRITTEN OPINION OF THE  
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International application No.

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Box No. V	Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement								
1. Statement	Novelty (N)	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 10%;">Claims</td> <td style="border-bottom: 1px solid black;">4-6</td> <td style="width: 10%; text-align: right;">YES</td> </tr> <tr> <td>Claims</td> <td style="border-bottom: 1px solid black;">1-3, 7-15</td> <td style="text-align: right;">NO</td> </tr> </table>	Claims	4-6	YES	Claims	1-3, 7-15	NO	
Claims	4-6	YES							
Claims	1-3, 7-15	NO							
	Inventive step (IS)	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 10%;">Claims</td> <td style="border-bottom: 1px solid black;">4-6</td> <td style="width: 10%; text-align: right;">YES</td> </tr> <tr> <td>Claims</td> <td style="border-bottom: 1px solid black;">1-3, 7-15</td> <td style="text-align: right;">NO</td> </tr> </table>	Claims	4-6	YES	Claims	1-3, 7-15	NO	
Claims	4-6	YES							
Claims	1-3, 7-15	NO							
	Industrial applicability (IA)	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 10%;">Claims</td> <td style="border-bottom: 1px solid black;">1-15</td> <td style="width: 10%; text-align: right;">YES</td> </tr> <tr> <td>Claims</td> <td style="border-bottom: 1px solid black;">_____</td> <td style="text-align: right;">NO</td> </tr> </table>	Claims	1-15	YES	Claims	_____	NO	
Claims	1-15	YES							
Claims	_____	NO							
2. Citations and explanations:									
<p>Document 1: JP 02-052360 A (Fujitsu Ltd.), 21 February 1990</p> <p>Document 2: JP 04-304465 A (Fuji Electric Co.), 27 October 1992</p> <p>Document 3: JP 07-011246 A (Fuji Electric Co Ltd), 13 January 1995</p> <p>Document 4: Journal fuer Praktische Chemie/Chemiker-Zeitung, 1996, 338 (5), pages 451 to 459</p> <p>Document 5: Journal of Materials Chemistry, 2006, 16 (9), pages 850 to 857</p> <p>Document 6: Journal of Materials Chemistry, 2007, 17 (10), pages 955 to 964</p> <p>Document 7: KR 10-2010-075079 A (Cheil Industries, Inc.), 02 July 2010</p> <p><u>Claims 1 to 3 and 7 to 15</u></p> <p>The invention as in claims 1 to 3 and 7 to 15 is not novel and does not involve an inventive step in the light of documents 1 to 7 cited in the ISR.</p> <p>Compound No. 10 in document 1, the compounds represented by chemical formulae I-63, I-65, II-65, II-66</p>									

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

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**Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

and so on in document 2, the compounds represented by formulae (I-2), (I-3) and so on in document 3, compounds 12b, 12C and so on in document 4, compound 13 in document 5, diamine 6 in document 6 and the compounds represented by chemical formulae 35, 37 and so on in document 7 are identical to the aromatic amine derivative represented by formula (1) in claim 1, and document 3 and document 7 indicate that the above-mentioned compounds are useful as organic electroluminescent elements.

In addition, the above-mentioned compounds disclosed in documents 1, 2 and 4 to 6 have triarylamine structures in the same way as the compounds disclosed in documents 3 and 7, and a person skilled in the art could easily conceive of using these compounds as organic electroluminescent elements due to this similarity in terms of structure.

Claims 4 to 6

The invention as in claims 4 to 6 is novel and involves an inventive step in relation to documents 1 to 3, 5 and 7 cited in the ISR. Documents 1 to 3, 5 and 7 each disclose a compound having a structure represented by formula (2) in claim 1 in a moiety where two nitrogen atoms are bonded (for example, L11 in formula (6) in claim 4 and so on), but do not disclose or suggest a compound having a structure represented by formula (2) in claim 1 in a side chain moiety to which a nitrogen atom is bonded (for example, Ar4 to Ar7 in formula (6) in claim 4 and so on).

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

International application No.

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**Box No. VI**      **Certain documents cited**

1. Certain published documents (Rule 43*bis*.1 and 70.10)

Application No. Patent No.	Publication date (day/month/year)	Filing date (day/month/year)	Priority date (valid claim) (day/month/year)
WO 2010/110553 A2 [EX]	30.09.2010	18.03.2010	23.03.2009
WO 2010/131930 A2 [EX]	18.11.2010	14.05.2010	15.05.2009
WO 2010/151083 A2 [EX]	19.12.2010	25.06.2010	25.06.2009
WO 2011/055912 A1 [EX]	12.05.2011	05.10.2010	04.11.2009

2. Non-written disclosures (Rule 43*bis*.1 and 70.9)

Kind of non-written disclosure	Date of non-written disclosure (day/month/year)	Date of written disclosure referring to non-written disclosure (day/month/year)

**Box No. VIII      Certain observations on the international application**

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

The aromatic amine derivatives represented by formulae (1) and (6) to (9) described in claims 1 to 9 encompass an extremely large number of compounds. However, what is disclosed within the meaning of PCT Article 5 is only an extremely small part of the compounds claimed, and the invention is therefore not adequately supported within the meaning of PCT Article 6.

Therefore, this written opinion is based on those parts that are disclosed in, and supported by, the description, that is, a benzene ring or a ring to which a benzene ring is condensed, in which a nitrogen atom is directly bonded to a substituent group.