

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)	See form PCT/ISA/210
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Applicant's or agent's file reference ASMF263-524	FOR FURTHER ACTION See paragraph 2 below
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International application No. PCT/IB2013/054601	International filing date (day/month/year) 04.06.2013	Priority date (day/month/year) 05.06.2012
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International Patent Classification (IPC) or both national classification and IPC

**C07C257/12 C07D235/02 C07D235/06 C07D239/70 C07D239/74
C07D239/88 C07D263/56 C07D471/04 C07D473/00**

Applicant

COMMISSARIAT A L'ENERGIE ATOMIQUE ET AUX ENERGIES ALTERNATIVES

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/EP	Date of completion of this opinion	Authorized officer
Facsimile No.		Telephone No.

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/IB2013/054601

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 43bis.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
INTERNATIONAL SEARCHING AUTHORITY**

International application No.

PCT/IB2013/054601

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)	Claims <u>1-15</u>	YES
		Claims _____	NO
	Inventive step (IS)	Claims <u>1-15</u>	YES
		Claims _____	NO
	Industrial applicability (IA)	Claims <u>1-15</u>	YES
		Claims _____	NO
2. Citations and explanations:	<p>Reference is made to the following documents:</p> <p>D1: ALINEZHAD, HESHMATOLLAH ET AL: "Synthesis of Benzimidazole Derivatives Using Heterogeneous ZnO Nanoparticles", SYNTHETIC COMMUNICATIONS (2012), 42(1), 102-108 CODEN: SYNCAV; ISSN: 0039-7911</p> <p>D2: WEITH, W.: "Methyenyldiphenyldiamine", CHEMISCHE BERICHTE, vol. 9, 1876, pages 454-458</p> <p>1. Document D1 or document D2 may be considered to be the closest prior art.</p> <p>D1 and D2 describe methods for producing nitrogen compounds of formula (I) from a formic acid amine.</p> <p>The method of claim 1 differs from that of document D1 and that of document D2 in that the reagents used for the reaction are different: in particular, claim 1 relates to</p>		

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/IB2013/054601

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

a method for preparing nitrogen compounds (I) in which an amine (II) is reacted with CO₂, a silane compound (III) and a nucleophilic agent (IV).

The subject matter of claims 1, 14 and 15 (and dependent claims 2-13) is therefore novel (PCT Article 33(2)).

2. It has been demonstrated with examples that the method of the present invention makes it possible to prepare different nitrogen compounds (I) (see pages 25-31, tables 1-4).

The problem to be solved by the present invention can therefore be considered to be that of providing another method for synthesis of the compound of formula (I).

The solution proposed in claim 1 (and dependent claims 2-13), namely that of using, as reagents, CO₂, a silane compound (III) and a nucleophilic agent (IV), is considered to be inventive (PCT Article 33(3)) because no document discloses such a synthesis method.

Similarly, given that the method of the claim involves an inventive step, the use of said method for the production of various compounds, as indicated in claims 14 and 15, is inventive.

WRITTEN OPINION OF THE
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International application No.

PCT/IB2013/054601

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:

3. The terms "preferably", "more preferably", and "such as" in the claims do not enable the true scope for which protection is sought to be assessed.

4. Contrary to PCT Rule 5.1(a)(ii), the description does not cite D1 or D2 or indicate the relevant prior art therein.