PATENT COOPERATION TREATY

From the INTERNATIONAL SEARCHING AUTHORITY

To:
China TAEDONGGANG Patent & Trademark
Law Office P.O.Box 777 Kaeson-dong, Moranbong
District, Pyongyang, Democratic People’s Republic of Korea

JO Song Chol

PCT

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

Date of mailing
(day/month/year) 06 June 2016

FOR FURTHER ACTION
See paragraph 2 below

Applicant’s or agent’s file reference
TP15003J

International application No.
PCT/KP2015/000039

International filing date (day/month/year) 01 November 2015

Priority date (day/month/year) 06 September 2015

International Patent Classification (IPC) or both national classification and IPC
C01C 5/10(2006.01)

Applicant
RI Jong Hwa et al

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
- [x] Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step and 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.

Name and mailing address of the ISA/
STATE INTELLECTUAL PROPERTY OFFICE OF THE
P.R.CHINA
China 6, Xitucheng Rd., Jimen Bridge,
Haidian District, Beijing 100088

Facsimile No. (86—10) 62019451

Date of completion of this opinion
31 May 2016

Authorized officer
SHI, Weiliang

Date of issue: 06 June 2016

Telephone No. (86-10)62085011

Form PCT/ISA/237 (Cover sheet) (July 2011)
<table>
<thead>
<tr>
<th>Box No. I</th>
<th>Basis of the opinion</th>
</tr>
</thead>
</table>

1. With regard to the **language**, this opinion has been established on the basis of:
   - [x] 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:
1. Statement

<table>
<thead>
<tr>
<th>Novelty (N)</th>
<th>Claims</th>
<th>YES</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Claims</td>
<td>NO</td>
</tr>
<tr>
<td>Inventive step (IS)</td>
<td>Claims</td>
<td>YES</td>
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<tr>
<td></td>
<td>Claims</td>
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<tr>
<td>Industrial applicability (IA)</td>
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<tr>
<td></td>
<td>Claims</td>
<td>NO</td>
</tr>
</tbody>
</table>

2. Citations and explanations:

[1] Reference is made to the following document:


[4] D1 discloses a process for preparing sodium cyanate, and the process comprises the steps of: adding urea and sodium carbonate into a grinder mixer, and mixing them for 5-10 min; adding the resulting mixture into a cast iron reactor; and heating the reactor to obtain sodium cyanate (page 380, lines 9-14). D1 further discloses that sodium cyanate can be decompounded to sodium cyanide in the presence of catalyst at a temperature of 700°C (page 380, lines 2-4).

[6] D1 is considered to be the closest prior art

[8] Novelty:

[9] Obviously, D1 discloses first- and second-order reactions. D1 does not disclose the steps d) to h) of claim 1. Therefore, claims 1-9 are novel under PCT Article 33(2).

[11] Inventive Step:

[12] Claim 1 differs from D1 in that steps d) to h) of claim 1 are not disclosed. The technical problem solved by claim 1 is to atomize and purify sodium cyanide. The means, such as centrifugal atomization, agitation, dissolution, precipitating, filtering, vacuum distillation, centrifugal separating and drying, are common in the art, thus it is easy for the skilled one in the art to carry out above common means to obtain atomized and purified sodium cyanide. Therefore, claim 1 is obvious and lacks an inventive step under PCT Article 33(3).

[13] D1 actually discloses iron as a catalyst and the decomposition temperature of sodium cyanate. It is easy for the skilled one in the art to transform sodium cyanate into sodium cyanide by deoxidizing the first-order reaction product. Other technical features in claims 2-9, which are not disclosed in D1, are common in the art, and can be easily determined by the skilled one in the art. Combining with the comment on claim 1, claims 2-9 are obvious and lack an inventive step under PCT Article 33(3).

[15] Industrial Applicability:

[16] The subject matter of claims 1 to 9 is industrially applicable, and meets PCT Article 33(4).