

**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>PWO1150775</b>	<b>FOR FURTHER ACTION</b>		See item 4 below
International application No. <b>PCT/CN2015/087911</b>	International filing date ( <i>day/month/year</i> ) <b>24 August 2015 (24.08.2015)</b>	Priority date ( <i>day/month/year</i> ) <b>03 August 2015 (03.08.2015)</b>	
International Patent Classification (8th edition unless older edition indicated) <b>See relevant information in Form PCT/ISA/237</b>			
Applicant <b>SHENZHEN CHINA STAR OPTOELECTRONICS TECHNOLOGY 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> <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 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 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 type="checkbox"/>	Box No. VI	Certain documents cited	<input type="checkbox"/>	Box No. VII	Certain defects in the international application	<input type="checkbox"/>	Box No. VIII	Certain observations on the international application
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	Date of issuance of this report <b>06 February 2018 (06.02.2018)</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>27.04.2016</b>
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Applicant's or agent's file reference <b>PWO1150775</b>	<b>FOR FURTHER ACTION</b> See paragraph 2 below
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International application No. <b>PCT/CN2015/087911</b>	International filing date (day/month/year) <b>24.08.2015</b>	Priority date (day/month/year) <b>03.08.2015</b>
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International Patent Classification (IPC) or both national classification and IPC  
**H01L51/52 (2006.01) i**

Applicant  
**SHENZHEN CHINA STAR OPTOELECTRONICS TECHNOLOGY CO., LTD.**

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.

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

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/CN2015/087911

**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  
INTERNATIONAL SEARCHING AUTHORITY**

International application No. PCT/CN2015/087911
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<b>Box No. V</b>	<b>Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</b>
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1. Statement			
Novelty (N)	Claims	3, 6-11	YES
	Claims	1-2, 4-5	NO
Inventive step (IS)	Claims	None	YES
	Claims	1-11	NO
Industrial applicability (IA)	Claims	1-11	YES
	Claims	None	NO

2. Citations and explanations:	
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[1] Reference documents:

[2] D1: CN 104508849 A

[3] D2: CN 103427041 A

[4] 1. Novelty and Inventive Step:

[5] D1 (see description, paragraphs [0026], [0027] and [0077] - [0097], and figure 2) discloses an EL element and a manufacturing method therefor, the EL element comprising a substrate 11, and an anode 23, an organic electroluminescent structure 21 and a cathode 22 sequentially formed on the substrate; the material of the anode 23 may be PEDOTPSS; and the surfaces of the anode 23, organic electroluminescent structure 21 and cathode 22 each having a cambered surface structure having periodic undulations. The manufacturing method therefor comprises: providing the substrate 11, a undercoat layer 12 having a concave-convex

**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

structure surface being formed on the substrate, and then forming the anode 23 having a concave-convex structure, the organic electroluminescent structure 21 and the cathode 22 being sequentially formed on the anode 23, and obtaining the EL element; the substrate 11 may be glass or polyester resin; the organic electroluminescent structure 21 may comprise a hole injection layer, a hole transport layer, and an organic electroluminescent material layer; and the cathode 22 being made of metal or alloy material. Therefore, all the technical features of claim 1 are disclosed in D1, and thus claim 1 does not comply with PCT 33 (2) and PCT 33 (3).

[6] The additional technical features of claims 2, 4 and 5 are disclosed in D1 (see description, paragraphs [0086], [0089] and [0097], and figure 2). Accordingly, claims 2, 4 and 5 do not comply with PCT Article 33(2) and PCT Article 33(3).

[7] The additional technical feature of claim 3 is the distinguishing technical feature of claim 3 over D1, and therefore claim 3 complies with PCT Article 33(2). However, the described distinguishing technical feature is common general knowledge in the art. Therefore, claim 3 does not comply with PCT Article 33(3).

[8] Claim 6 differs from D1 by: providing PEDOT: PSS solution, which is coated on the substrate using a wet coating process; providing a template, a

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

cambered surface pattern having periodic undulations being provided on the template, and copying the pattern on the template onto a PEDOT: PSS film using a method of transfer printing; curing the PEDOT: PSS film by using UV light, and removing the template. In addition to the described differences, claim 11 further differs from D1 in that: the wet coating process is spin coating. Therefore, claims 6-11 comply with PCT Article 33(2).

[9] D2 (see description, paragraphs [0059] and [0061]) discloses a flexible organic light emitting diode, an anode conductive film of PEDOT: PSS material being formed by means of a method of spin coating or roll imprinting. D2 provides the technical motivation of applying the described feature to D1. In addition, forming a concave-convex structure on a film by using a transfer printing method for a template and removing the template after the curing by UV light are common general knowledge in the art. Therefore, claims 6 and 11 do not comply with PCT Article 33(3).

[10] The additional feature of claim 7 that the substrate is a glass substrate is disclosed in D1 (see description, paragraph [0026]), and D1 also discloses that the substrate is polyester resin (see description, paragraph [0026]). Moreover, polyester resin is commonly used as flexible substrate material in the art. Therefore claim 7 does not comply with PCT Article 33(3).

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/CN2015/087911

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

[11] The additional technical feature of claim 8 is disclosed in D2 (see description, paragraph [0061]), and accordingly claim 8 does not comply with PCT Article 33(3).

[12] The additional technical features of claims 9 and 10 are disclosed in D1 (see description, paragraphs [0086], [0089] and [0097]). Accordingly, claims 9 and 10 do not comply with PCT Article 33(3).

[13] 2. Industrial Applicability

[14] Claims 1-11 are industrially applicable and comply with PCT Article 33(4).