Abstract: Apparatus for monitoring oxygen saturation levels in tissue for a miniature wireless disposable optical tissue oximeter to be disclosed. According to one aspect of the present invention, a sensor contains a first light source, a second light source, a photodetector, and a skin contact detector. Once skin contact is detected, the first light source emits light in the near infrared region, and the second light source emits light in the visible red region. The emitted light passes through a transparent layer of an adhesive fixation unit, and enters the underlying tissue, where a portion of the light is absorbed by tissue chromophores, including oxygenated hemoglobin and deoxygenated hemoglobin, and reflected back out of the tissue into the photodetector. The oxygen saturation of the tissue under the sensor is then calculated. The oxygen saturation measurements are wirelessly transmitted to a remote display device, such as a smartphone running a smartphone software application which receives the measurements and displays them in numeric, graphical, and audible form. In addition, the smartphone software application may relay the data to the Internet for remote viewing on a web site or remote transfer to a hospital patient data system.
INTERNATIONAL SEARCH REPORT

A. CLASSIFICATION OF SUBJECT MATTER

INV. A61B5/1455

B. FIELD SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

A61B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

C. DOCUMENTS CONSIDERED TO BE RELEVANT

<table>
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<tr>
<th>Category</th>
<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
<th>Relevant to claim No.</th>
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<tbody>
<tr>
<td></td>
<td>figure 1, paragraphs [0009], [0033], [0055], [0063]</td>
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<td>paragraphs [0040], [0054], [0055]; figures 1, 2, 6</td>
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Further documents are listed in the continuation of Box C. See patent family annex.

* Special categories of cited documents:
- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier application or patent but published on or after the international filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed
- "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
- "Z" document member of the same patent family

Date of the actual completion of the international search

16 January 2013

Date of mailing of the international search report

29/05/2013

Name and mailing address of the ISA/Authorized officer

European Patent Office, P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk
Tel: (+31-70) 340-2040, Fax: (+31-70) 340-3016

Vanderperren, Yves
This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. □ Claims Nos.:
   because they relate to subject matter not required to be searched by this Authority, namely:

2. □ Claims Nos.:
   because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. □ Claims Nos.:
   because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

This International Searching Authority found multiple inventions in this international application, as follows:

   see additional sheet

1. □ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.

2. □ As all searchable claims could be searched without effort justifying an additional fees, this Authority did not invite payment of additional fees.

3. □ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. □ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

   1 - 8

Remark on Protest

□ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.

□ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.

□ No protest accompanied the payment of additional search fees.
This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-8

   A tissue oximeter comprising a disposable adhesive fixation system arranged to fully contain the tissue oximeter and adhere it to the skin.

2. claims: 9-15

   A tissue oximeter comprising a disposable adhesive fixation system arranged to be removably attachable to a portion of the tissue oximeter and adhere it to the skin.
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<td>US 2013109936 A1</td>
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