Title: ELECTROCHEMICAL DETECTION OF ANALYTE

Abstract: Described herein is a method of detecting an analyte comprising providing a capture electrode comprising probe molecules at the surface thereof, wherein the probe molecules are designed to specifically bind to said analyte, contacting the capture electrode with a sample solution, such that said analyte in the solution forms a probe-analyte complex at the surface of said capture electrode, and measuring the electrical properties of the capture electrode after contact with said sample solution, wherein changes in said electrical properties are indicative of the formation of the probe-analyte complex at the electrode surface. The measuring is conducted in measuring solutions comprising solvents having high dielectric constants, or measuring solutions having high pH, or with electrode surfaces having been contacted with solutions comprising organic solvents.
**INTERNATIONAL SEARCH REPORT**

**CLASSIFICATION OF SUBJECT MATTER**

INV. G01N33/53  G01N33/543  C12Q1/68  G01N33/487

**MINIMUM DOCUMENTATION SEARCHED**

G01N C12Q

**DOCUMENTATION SEARCHED OTHER THAN MINIMUM DOCUMENTATION TO THE EXTENT THAT SUCH DOCUMENTS ARE INCLUDED IN THE FIELDS SEARCHED**

**ELECTRONIC DATA BASES CONSULTED DURING THE INTERNATIONAL SEARCH (NAME OF DATA BASE AND, WHERE PRACTICAL, SEARCH TERMS USED)**

EPO-Internal, BIOSIS, EMBASE, WPI Data

**DOCUMENTS CONSIDERED TO BE RELEVANT**

<table>
<thead>
<tr>
<th>Category</th>
<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
<th>Relevant to claim No.</th>
</tr>
</thead>
</table>

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 document 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

**Date of the actual completion of the international search**

15 November 2011

**Date of mailing of the international search report**

23/03/2012

**Authorized officer**

Luis Alves, Dulce
INTERNATIONAL SEARCH REPORT

Box No. II  Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

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).

Box No. III  Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

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.:
   
   2, 3, 16(completely); 1, 8-14(partially)

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: 2, 3, 16(completely); 1, 8-14(partially)

   Methods of detecting an analyte by measuring an electrical property at an electrode provided with specific probes on its surface, wherein the measuring solution has a pH of at least 7.5.

   ---

2. claims: 4-6, 15(completely); 1, 8-14(partially)

   Methods of detecting an analyte by measuring an electrical property at an electrode provided with specific probes on its surface, wherein the measuring solution comprises at least one non-aqueous solvent having a dielectric constant higher than 80 at 30°C.

   ---

3. claims: 7, 17(completely); 1, 8-14(partially)

   Methods of detecting an analyte by measuring an electrical property at an electrode provided with specific probes on its surface, wherein prior to measurements the electrode is contacted with a solution comprising at least one organic solvent.

   ---
<table>
<thead>
<tr>
<th>Category</th>
<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
<th>Relevant to claim No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td>PIKE ANDREW R ET AL: &quot;Ferrocenyl-modified DNA: synthesis, characterization and integration with semiconductor electrodes.&quot;. CHEMISTRY (WEINHEIM AN DER BERGSTRASSE, GERMANY) 17 DEC 2004 LNKD-PUBMED:15551318, vol. 11, no. 1, 17 December 2004 (2004-12-17), pages 344-353, XP002653396, ISSN: 0947-6539 abstract page 344, right-hand column, last paragraph - page 345, right-hand column, paragraph 1 page 349, left-hand column, last paragraph - page 350, right-hand column, paragraph 1 &quot;Experimental section, on p.351 - Electrochemistry&quot;</td>
<td>1,2,8-14</td>
</tr>
</tbody>
</table>


<table>
<thead>
<tr>
<th>Patent document cited in search report</th>
<th>Publication date</th>
<th>Patent family member(s)</th>
<th>Publication date</th>
</tr>
</thead>
<tbody>
<tr>
<td>WO 2009119971 A2</td>
<td>01-10-2009</td>
<td>CN 101981445 A</td>
<td>23-02-2011</td>
</tr>
<tr>
<td></td>
<td></td>
<td>EP 2273263 A2</td>
<td>12-01-2011</td>
</tr>
<tr>
<td></td>
<td></td>
<td>JP 2011517769 A</td>
<td>16-06-2011</td>
</tr>
<tr>
<td></td>
<td></td>
<td>KR 20090101764 A</td>
<td>29-09-2009</td>
</tr>
<tr>
<td></td>
<td></td>
<td>US 2011024309 A1</td>
<td>03-02-2011</td>
</tr>
<tr>
<td></td>
<td></td>
<td>WO 2009119971 A2</td>
<td>01-10-2009</td>
</tr>
<tr>
<td>EP 2273263 A2</td>
<td>12-01-2011</td>
<td>CN 101981445 A</td>
<td>23-02-2011</td>
</tr>
<tr>
<td></td>
<td></td>
<td>EP 2273263 A2</td>
<td>12-01-2011</td>
</tr>
<tr>
<td></td>
<td></td>
<td>JP 2011517769 A</td>
<td>16-06-2011</td>
</tr>
<tr>
<td></td>
<td></td>
<td>KR 20090101764 A</td>
<td>29-09-2009</td>
</tr>
<tr>
<td></td>
<td></td>
<td>US 2011024309 A1</td>
<td>03-02-2011</td>
</tr>
<tr>
<td></td>
<td></td>
<td>WO 2009119971 A2</td>
<td>01-10-2009</td>
</tr>
<tr>
<td>US 2004072158 A1</td>
<td>15-04-2004</td>
<td>NONE</td>
<td></td>
</tr>
</tbody>
</table>