



(11) **EP 1 712 635 A3**

(12) **EUROPEAN PATENT APPLICATION**

(88) Date of publication A3:  
**04.04.2007 Bulletin 2007/14**

(51) Int Cl.:  
**C12Q 1/00** <sup>(2006.01)</sup> **A61B 5/00** <sup>(2006.01)</sup>  
**G01N 27/406** <sup>(2006.01)</sup>

(43) Date of publication A2:  
**18.10.2006 Bulletin 2006/42**

(21) Application number: **06252010.1**

(22) Date of filing: **11.04.2006**

(84) Designated Contracting States:  
**AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IS IT LI LT LU LV MC NL PL PT RO SE SI SK TR**  
Designated Extension States:  
**AL BA HR MK YU**

(30) Priority: **12.04.2005 US 671026 P**  
**28.04.2005 US 118947**  
**28.04.2005 US 118507**  
**28.04.2005 US 118894**

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(54) **Water-miscible conductive ink for use in enzymatic electrochemical-based sensors**

(57) A water-miscible conductive ink for use in enzymatic electrochemical-based sensors includes a conductive material, an enzyme, a mediator and a binding agent. The conductive material, enzyme, mediator, and binding

agent are formulated as a water-miscible aqueous-based dispersion wherein the binding agent becomes operatively water-insoluble upon drying.

**EP 1 712 635 A3**



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| Y  | *column 2, lines 16-21,<br>column 10, line 1 - column 11, line 24,<br>column 20, line 62 - column 21, line 41*  | 11,32   |  |
|  | -----<br>-/--   |   |  |
| The present search report has been drawn up for all claims   |   |   |  |
| Place of search<br>Munich  |   | Date of completion of the search<br>22 February 2007  | Examiner<br>Lindberg, Pia  |
| CATEGORY OF CITED DOCUMENTS<br>X : particularly relevant if taken alone<br>Y : particularly relevant if combined with another document of the same category<br>A : technological background<br>O : non-written disclosure<br>P : intermediate document |   | T : theory or principle underlying the invention<br>E : earlier patent document, but published on, or after the filing date<br>D : document cited in the application<br>L : document cited for other reasons<br>-----<br>& : member of the same patent family, corresponding document |  |



| DOCUMENTS CONSIDERED TO BE RELEVANT   |   |  |   |
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| The present search report has been drawn up for all claims  |   |  |   |
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EPO FORM 1503 03.82 (P04C01)



| DOCUMENTS CONSIDERED TO BE RELEVANT   |  |   |   |
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| The present search report has been drawn up for all claims  |  |   | TECHNICAL FIELDS SEARCHED (IPC)         |
| Place of search<br>Munich   |  | Date of completion of the search<br>22 February 2007  | Examiner<br>Lindberg, Pia               |
| <b>CATEGORY OF CITED DOCUMENTS</b><br>X : particularly relevant if taken alone<br>Y : particularly relevant if combined with another document of the same category<br>A : technological background<br>O : non-written disclosure<br>P : intermediate document |  | T : theory or principle underlying the invention<br>E : earlier patent document, but published on, or after the filing date<br>D : document cited in the application<br>L : document cited for other reasons<br>.....<br>& : member of the same patent family, corresponding document |   |

EPO FORM 1503 03.82 (P04C01)

**CLAIMS INCURRING FEES**

The present European patent application comprised at the time of filing more than ten claims.

- Only part of the claims have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims and for those claims for which claims fees have been paid, namely claim(s):
- No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims.

**LACK OF UNITY OF INVENTION**

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

see sheet B

- All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.
- As all searchable claims could be searched without effort justifying an additional fee, the Search Division did not invite payment of any additional fee.
- Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid, namely claims:
- None of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims, namely claims:



The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

1. claims: 1-9 (partially), 12 (partially) and 14-32 (partially)

A first conductive ink comprising a resin polymer, a counter ion and/or at least one copolymer, a sensor comprising the said first conductive ink and a method for manufacturing a part of the said sensor.

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2. claims: Claims 1-7 (partially), 10-12 (partially) and 14-32 (partially)

A second conductive ink comprising a resin polymer, an organic co-solvent and/or at least one copolymer, a sensor comprising the said second conductive ink and a method for manufacturing a part of the said sensor.

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3. claims: 1-9 (partially), 13-32 (partially)

A third conductive ink comprising a resin polymer, a counter ion and/or at least one selected monomer -monomer combination, a sensor comprising the said third conductive ink and a method for manufacturing a part of the said sensor.

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4. claims: 1-7 (partially), 10-11 (partially), 13-32 (partially)

A fourth conductive ink comprising a resin polymer, an organic co-solvent and/or at least one selected monomer-monomer combination, a sensor comprising the said fourth conductive ink and a method for manufacturing a part of the said sensor.

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**ANNEX TO THE EUROPEAN SEARCH REPORT  
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EP 06 25 2010

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on  
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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

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EP 06 25 2010

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|                |   |         |            |
|----------------|---|---------|------------|
| 专利名称(译)        | 可与水混溶的导电油墨，用于基于酶电化学的传感器   |         |            |
| 公开(公告)号        | <a href="#">EP1712635A3</a>   | 公开(公告)日 | 2007-04-04 |
| 申请号            | EP2006252010  | 申请日     | 2006-04-11 |
| [标]申请(专利权)人(译) | 生命扫描苏格兰有限公司   |         |            |
| 申请(专利权)人(译)    | LIFESCAN苏格兰有限公司   |         |            |
| 当前申请(专利权)人(译)  | LIFESCAN苏格兰有限公司   |         |            |
| [标]发明人         | RODGERS JAMES IAIN<br>LIU ZUIFANG<br>MCNEILAGE ALAN WATSON<br>MACLENNAN MARGARET<br>MOFFAT JAMES<br>LILLIE GEOFFREY<br>MACDONALD MICHAEL        |         |            |
| 发明人            | RODGERS, JAMES IAIN<br>LIU, ZUIFANG<br>MCNEILAGE, ALAN WATSON<br>MACLENNAN, MARGARET<br>MOFFAT, JAMES<br>LILLIE, GEOFFREY<br>MACDONALD, MICHAEL |         |            |
| IPC分类号         | C12Q1/00 A61B5/00 G01N27/406  |         |            |
| CPC分类号         | C09D11/52   |         |            |
| 代理机构(译)        | MERCER , CHRISTOPHER PAUL   |         |            |
| 优先权            | 11/118947 2005-04-28 US<br>11/118507 2005-04-28 US<br>60/671026 2005-04-12 US<br>11/118894 2005-04-28 US  |         |            |
| 其他公开文献         | EP1712635A2<br>EP1712635B1  |         |            |
| 外部链接           | <a href="#">Espacenet</a>   |         |            |

#### 摘要(译)

用于基于酶电化学的传感器的水混溶性导电油墨包括导电材料，酶，介体和粘合剂。将导电材料，酶，介体和粘合剂配制成水混溶性水基分散体，其中粘合剂在干燥时变得可操作地不溶于水。



| DOCUMENTS CONSIDERED TO BE RELEVANT                        |  |                                       |  |
|--|--|---------------------------------------|--|
| Category   | Citation of document with indication, where appropriate, of relevant passages  | Relevant passages                     | CLASSIFICATION OF THE APPLICABLE IPC CLASS                       |
| X  | EP 0 352 925 A (CAMBRIDGE LIFE SCIENCES PLC) 31 January 1990 (1990-01-31)  | 1-5,7, 15, 20-24, 26, 28-32           | INV, C12Q1/00, A61B5/00, G01N27/406                              |
| Y  | * column 4, line 8 - column 8, line 40 *   | 6,8,9, 12,14, 16-19, 25,27            |  |
| X  | PATENT ABSTRACTS OF JAPAN<br>vol. 1996, no. 02,<br>23 February 1996 (1996-02-23)<br>& JP 07 270374 A (TOPPAN PRINTING CO LTD),<br>20 October 1995 (1995-10-20)<br>* the whole document * | 1-5,7, 15, 20-24, 26-31, 28-31, 25,27 |  |
| Y  |  | 6,12,14, 16-19, 25,27                 |  |
| A  | US 6 764 581 B1 (FORROW NIGEL J ET AL)<br>20 July 2004 (2004-07-20)<br>* claims 1-12 *   | 6                                     |  |
| Y  |  | 1-5,7-9, 12,14-32                     | TECHNICAL FIELDS SEARCHED (IPC):<br>C12Q<br>A61B<br>G01N<br>C09D |
| A  | EP 0 992 589 A (MATSUSHITA ELECTRIC INDUSTRIAL CO., LTD)<br>12 April 2000 (2000-04-12)<br>*the whole document, especially paragraph [0021]*  | 6                                     |  |
| Y  |  | 1-5,7-9, 12,14-32                     |  |
| X  | US 6 134 461 A (SAY JAMES [US] ET AL)<br>17 October 2000 (2000-10-17)  | 1-7,10, 14,15, 20-24, 26-31, 13,32    |  |
| Y  | *column 2, lines 16-21,<br>column 10, line 1 - column 11, line 24,<br>column 20, line 62 - column 21, line 41*   |                                       |  |
|  |  | -/--                                  |  |
| The present search report has been drawn up for all claims |  |                                       |  |
| Place of search  |  | Date of completion of the search      |  |
| Munich   |  | 22 February 2007                      |  |
|  |  | Examiner                              |  |
|  |  | Lindberg, Pia                         |  |
| CATEGORY OF CITED DOCUMENTS                                |  |                                       |  |
| X  | particularly relevant to the invention   | I                                     | theory or principle underlying the invention                     |
| Y  | particularly relevant if disclosed with another member of the same family  | B                                     | prior art document, not disclosed on, or prior to, the filing    |
| A  | disclosure of the same invention   | D                                     | document cited in the application                                |
| C  | non-written disclosures  | L                                     | document cited for other reasons                                 |
| D  | obviousness  | S                                     | member of the same patent family, corresponding document         |

EPO/ESP/EP(20)