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Declaration under Rule 4.17:

— of inventorship (Rule 4.17(iv))

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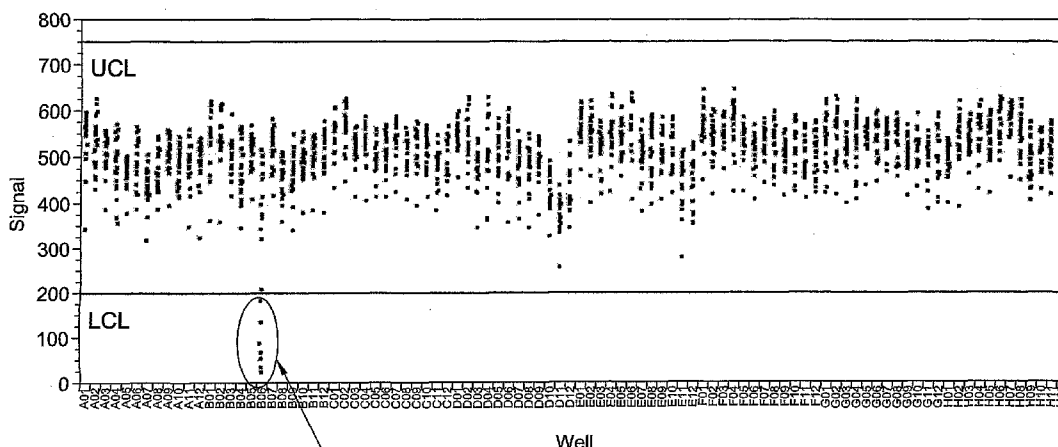
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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

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(54) Title: QUALITY CONTROL OF PROBE ATTACHMENT ON ELECTRODES

Quality Control Chart



Electrodes that failed QC

UCL: Upper Control Limit
LCL: Lower Control Limit

(57) Abstract: The present disclosure relates to methods of quantifying nucleic acid molecules immobilized on an electrode of an electrochemical assay chip. Such quantification can be used in testing and quality control of assay chips. Materials and instrumentation useful in performing such techniques are also disclosed.

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INTERNATIONAL SEARCH REPORT

International application No
PCT/US2006/040231A. CLASSIFICATION OF SUBJECT MATTER
INV. C12Q1/68

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
C12Q

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

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, EMBASE, BIOSIS

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>YANG WENRONG ET AL: "Evidence for the direct interaction between methylene blue and guanine bases using DNA-modified carbon paste electrodes." ELECTROANALYSIS, vol. 14, no. 18, October 2002 (2002-10), pages 1299-1302, XP002426550 ISSN: 1040-0397 the whole document</p> <p style="text-align: center;">----- -/--</p>	1-13

 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

"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.

"&" document member of the same patent family

Date of the actual completion of the international search

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Name and mailing address of the ISA/

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Werner, Andreas

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2006/040231

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	MILLAN KM ET AL.: "SEQUENCE-SELECTIVE BIOSENSOR FOR DNA BASED ON ELECTROACTIVE HYBRIDIZATION INDICATORS" ANALYTICAL CHEMISTRY, AMERICAN CHEMICAL SOCIETY. COLUMBUS, US, vol. 65, 1993, pages 2317-2323, XP000396986 ISSN: 0003-2700 page 2320, column 2, paragraph 2; figure 3	1-13
X	ERDEM A, KERMAN K, MERİÇ B, ÖZKAN D, KARA P, ÖZSÖZ M: "DNA Biosensor for Microcystis spp. Sequence Detection by Using Methylene Blue and Ruthenium Complex as Electrochemical Hybridization Labels" TURKISH JOURNAL OF CHEMISTRY, vol. 26, no. 6, December 2002 (2002-12), pages 851-862, XP002426551 the whole document	1-13
X	KELLEY S O ET AL: "Single-base mismatch detection based on charge transduction through DNA" NUCLEIC ACIDS RESEARCH, OXFORD UNIVERSITY PRESS, SURREY, GB, vol. 27, no. 24, 15 December 1999 (1999-12-15), pages 4830-4837, XP002235954 ISSN: 0305-1048 figure 8	1-13
A	US 6 686 150 B1 (BLACKBURN GARY [US] ET AL) 3 February 2004 (2004-02-03) paragraph [0246] paragraph [0442] paragraph [0526]	1-13
A	DRACKA O.: "Theory of current elimination in linear scan voltammetry." JOURNAL OF ELECTROANALYTICAL CHEMISTRY, vol. 402, no. 1, 7 February 1996 (1996-02-07), pages 19-28, XP002426552 the whole document	1-13
A	TRNKOVA LIBUSE ET AL: "Application of elimination voltammetry to adsorptive stripping of DNA" ELECTROANALYSIS, vol. 12, no. 12, August 2000 (2000-08), pages 905-911, XP002426553 ISSN: 1040-0397 the whole document	1-13
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INTERNATIONAL SEARCH REPORT

International application No

PCT/US2006/040231

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2002/123048 A1 (GAU VINCENT JEN-JR [US]) 5 September 2002 (2002-09-05) paragraph [0177] paragraph [0104] - paragraph [0105]	1-13
A	STEEL AB, HERNE TM, TARLOV MJ: "Electrochemical quantitation of DNA immobilized on gold." ANALYTICAL CHEMISTRY, AMERICAN CHEMICAL SOCIETY. COLUMBUS, US, vol. 70, no. 22, 15 November 1998 (1998-11-15), pages 4670-4677, XP002285670 ISSN: 0003-2700 figure 3	5
A	US 6 346 387 B1 (STEWART DAVID H [US] ET AL) 12 February 2002 (2002-02-12) paragraph [0099] paragraph [0103]	6-9, 12

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2006/040231

Box 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.: **1, 6-9, 12 (in part)**
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:
see FURTHER INFORMATION sheet PCT/ISA/210

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 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:

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 fee, this Authority did not invite payment of any additional fee.

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.:

Remark on Protest

- The additional search fees were accompanied by the applicant's protest.
- No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Continuation of Box II.2

Claims Nos.: 1, 6-9, 12 (in part)

Present claims 1, 6-9 and 12 relate to methods defined inter alia by reference to an unspecified "frequency". The use of this unusual parameter in the present context is considered to lead to a lack of clarity because this parameter cannot be clearly and reliably determined by objective procedures which are usual in the art. The description only provides support for this "frequency" being the "readout frequency" (see [0017]), viz. the scan rate/sampling rate/sweep rate setting of the experiment, which is only sufficiently defined if referring either to the scan rate U/t [volt/second], or alternatively to both frequency [Hz] and potential step [V]. As the present definition lacks any indication of the potential step employed, any scan rate could be construed to fall within the scope of the claims merely by adjusting the potential step. This makes it impossible to compare the claims to the prior art. As a result, the application does not comply with the requirement of disclosure and clarity under Art. 5 and 6 PCT.

This lack of disclosure and clarity is to such an extent that the search was performed taking into consideration the non-compliance in determining the extent of the search. The single embodiment (Example 1, [0026]) provides support for frequencies of 50, 150 and 300 Hz at a voltage step size of -10 mV, but the description does not seem to place any particular restriction on possible values for said potential step. The search of said claims was consequently directed to prior art using parameters common in the technical field.

The applicant's attention is drawn to the fact that claims relating to inventions in respect of which no international search report has been established need not be the subject of an international preliminary examination (Rule 66.1(e) PCT). The applicant is advised that the EPO policy when acting as an International Preliminary Examining Authority is normally not to carry out a preliminary examination on matter which has not been searched. This is the case irrespective of whether or not the claims are amended following receipt of the search report or during any Chapter II procedure. If the application proceeds into the regional phase before the EPO, the applicant is reminded that a search may be carried out during examination before the EPO (see EPO Guideline C-VI, 8.5), should the problems which led to the Article 17(2) declaration be overcome.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2006/040231

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 6686150	B1	03-02-2004	NONE
US 2002123048	A1	05-09-2002	NONE
US 6346387	B1	12-02-2002	NONE