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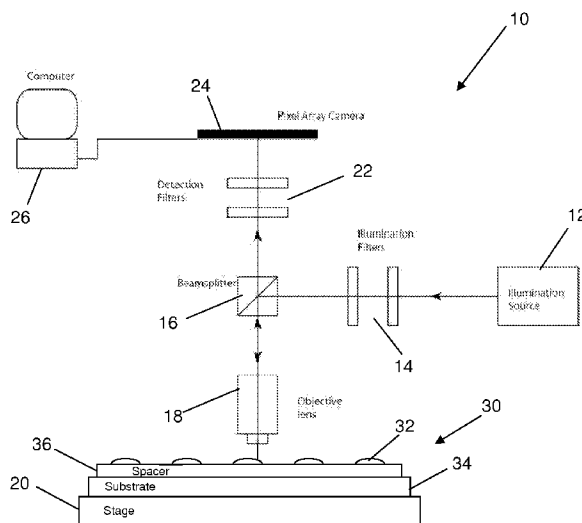
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Published:
— with international search report

[Continued on next page]

(54) Title: MOLECULAR INTERFEROMETRIC IMAGING PROCESS AND APPARATUS



(57) Abstract: A molecular interferometric imaging system for detecting an analyte in a sample, that includes an illumination source providing a beam of radiation; a pixel array for detecting radiation in an image plane; a biolayer designed to react to the analyte when it comes in contact with the sample; a substrate designed to convert phase modulation into intensity modulation which can be detected and imaged directly by the pixel array, the biolayer being on the substrate; a reference surface; an image switching means for switching between a first position for collecting a sample image of the biolayer, and a second position for collecting a reference image of the reference surface; and a processing means for producing a composite image using the sample image and the reference image for illumination normalization.



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23 October 2008

INTERNATIONAL SEARCH REPORT

International application No

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A. CLASSIFICATION OF SUBJECT MATTER
 INV. GO1N21/45

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)
 GO1N

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, INSPEC, BIOSIS

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 999 262 A (DOBSCHAL HANS-JUERGEN [DE] ET AL) 7 December 1999 (1999-12-07)	1,7,9, 11, 14-18, 20-22, 24,27-34
Y	abstract column 5, line 34 - column 6, line 16 column 6, line 66 - column 7, line 8 column 7, line 59 - column 8, line 33 column 8, line 60 - column 9, line 32 figures 1-3,6,8,9 ----- -/--	2-5,10, 12,13

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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INTERNATIONAL SEARCH REPORT

International application No

PCT/US2007/086059

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X A	<p>US 2003/112446 A1 (MILLER BENJAMIN [US] ET AL) 19 June 2003 (2003-06-19)</p> <p>abstract paragraph [0023] - paragraph [0027] paragraph [0077] - paragraph [0078] figures 1,2</p>	<p>1,7-9, 11,14, 16, 19-22, 24,27, 29-34 4,5</p>
X	<p>US 6 483 588 B1 (GRAEFE DIETER [DE] ET AL) 19 November 2002 (2002-11-19)</p> <p>abstract column 1, line 4 - line 63 column 4, line 23 - line 51 column 5, line 19 - line 37 column 6, line 27 - line 37 figures 1,2,4</p>	<p>1,7,9, 11, 14-18, 20-24, 27-34</p>
Y	<p>WO 2006/042746 A (UNIV TUEBINGEN [DE]; FRANK RUEDIGER [DE]; MOEHRLE BERND [DE]; GAUGLITZ) 27 April 2006 (2006-04-27)</p> <p>abstract page 5, line 5 - line 23 page 6, line 8 - line 21 page 7, line 6 - page 8, line 6 claim 10</p>	<p>2-5,10, 12,13</p>
A	<p>JENISON ROBERT ET AL: "Interference-based detection of nucleic acid targets on optically coated silicon" NATURE BIOTECHNOLOGY, NATURE PUBLISHING GROUP, NEW YORK, NY, US, vol. 19, no. 1, January 2001 (2001-01), pages 62-65, XP002319097 ISSN: 1087-0156</p> <p>abstract page 62, left-hand column, last paragraph page 65, right-hand column</p>	<p>1,8,9,24</p>
A	<p>US 6 685 885 B2 (NOLTE DAVID D [US] ET AL) 3 February 2004 (2004-02-03) cited in the application abstract column 4, line 17 - line 28 column 5, line 29 - line 67 figure 6</p>	<p>2-5,10, 12,13</p>

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INTERNATIONAL SEARCH REPORT

International application No

PCT/US2007/086059

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
P, X	<p>NOLTE, DAVID D.: "Molecular Interferometry"[Online] 26 June 2007 (2007-06-26), XP002474407 nanoHUB Retrieved from the Internet: URL: https://www.nanohub.org/resources/2832 /> [retrieved on 2008-03-28] section: "Molecular Interferometric Imaging (MI2)"</p> <p>-----</p>	1-5, 7-16, 18-22, 24, 27-34

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2007/086059

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 allsearchable 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.:

1-5, 7-24, 27-34

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.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-5,7-24,27-34

Molecular interferometric imaging system working in a quadrature in-line condition

2. claims: 6,25,26

Molecular interferometric imaging system shifting the substrate between two positions relative to the imager

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2007/086059

Patent document cited in search report	Publication date	Patent family member(s)	Publication date	
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			EP 0834066 A1	08-04-1998
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