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(54) Title: ADJUNCT QUANTITATIVE SYSTEM AND METHOD FOR NON-INVASIVE MEASUREMENT OF IN VIVO ANALYTES

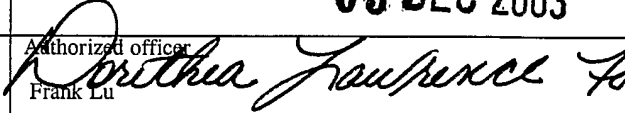
(57) Abstract: The invention is directed to a method and apparatus for detecting and measuring the concentration of an analyte in a tissue and a patient. Particularly, the invention is directed to methods wherein a spectroscopic measurement is combined with an adjunct spectroscopic or non-spectroscopic measurement to provide a more accurate measure of the analyte. The non-spectroscopic measurements include adjunct spectral measurements, adjunct physiological measurements of the patient, the tissue or the patient from whom the tissue was obtained, or adjunct informational determinants. Preferably these methods can be used for determining the level of glucose in a patient and for enhancing a calibration system.



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INTERNATIONAL SEARCH REPORT

International application No.
PCT/US02/23348

A. CLASSIFICATION OF SUBJECT MATTER IPC(7) : G01N 33/53; G01N 15/06 US CL : 435/7.1; 422/68.1 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) U.S. : 435/7.1; 422/68.1 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 practicable, search terms used) Please See Continuation Sheet		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5,985,214 A (STYLLI et al.) 16 November 1999(16.11. 1999), see entire document, especially columns 23-32.	1-5 and 32-34
X	US 5,665,962 A (KIMURA et al.) 09 September 1997 (09.09.1997), see whole document, especially columns 5-11.	32-34
<input type="checkbox"/> Further documents are listed in the continuation of Box C. <input type="checkbox"/> 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	"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
"E"	earlier application or patent published on or after the international filing date	"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
"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)	"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
"O"	document referring to an oral disclosure, use, exhibition or other means	"&" document member of the same patent family
"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 28 September 2003 (28.09.2003)		Date of mailing of the international search report 03 DEC 2003
Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (703) 305-3230		Authorized officer  Frank Lu Telephone No. (703) 308-0196

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US02/23348

Box I Observations where certain claims were found unsearchable (Continuation of Item 1 of first sheet)

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

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

2. Claim 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. Claim Nos.: 6-31 and 35-44
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of Item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:
Please See Continuation 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 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.

BOX II. OBSERVATIONS WHERE UNITY OF INVENTION IS LACKING:

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1. In order for all inventions to be examined, the appropriate additional examination fees must be paid.

Group I, claims 1-5, drawn to a method of determining a level of at least one analyte in a tissue.

Group II, claims 32-34, drawn to an apparatus for determining a level of at least one analyte in a tissue.

and it considers that the International Application does not comply with the requirements of unity of invention (Rules 13.1, 13.2 and 13.3) for the reasons indicated below:

The inventions listed as Groups I and II do not relate to a single inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons:

Groups I and II do not relate to a single inventive concept because they lack the same or corresponding special technical features since an apparatus is known in the art. For example, since claim 32 only requires a light source that can excite a tissue with excitation radiation, a detector for detecting at least one spectral emission from the excited tissue, a determining means that can determine, record or collect an adjunct parameter and a means that can combine said spectral emission detected with said adjunct parameter to obtain the level of the at least one analyte in the tissue while Kimura's patent teaches all components recited in claim 32 (US Patent No. 5,665,962, published on September 9, 1997), the technical feature of Group II is not special.

Continuation of B. FIELDS SEARCHED Item 3:

STN AND WEST

Search terms: exciation, radiation, spectral, emission, adjunct, parameter, determine or determination, determining means. transmitting means, and parameter