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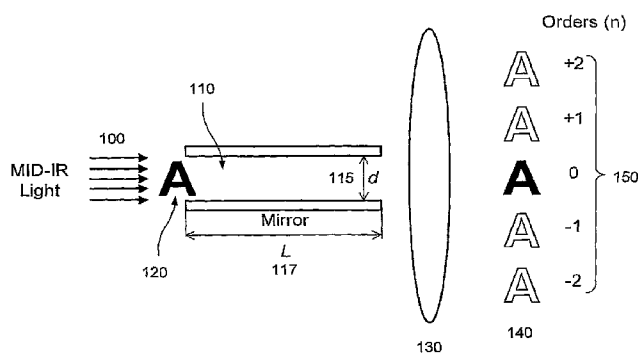
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(54) Title: SYSTEMS AND PROCESSES FOR PROVIDING ENDOGENOUS MOLECULAR IMAGING WITH MID-INFRARED LIGHT



(57) Abstract: Exemplary systems and processes for generating information associated with at least one portion of a sample are provided. In one exemplary embodiment, at least one electro-magnetic radiation can be received from the at least one portion, whereas the electro-magnetic radiation has a wavenumber that is between approximately $5,000 \text{ cm}^{-1}$ and 600 cm^{-1} . The information can be generated which includes structural data, molecular data and/or chemical data of the portion. The information can be generated based on (a) at least one phase of the at least one electro-magnetic radiation, and/or (b) at least one refractive index of the at least one portion. According to another exemplary embodiment, the electro-magnetic radiation having a first wavenumber can be transmitted to the portion which has at least two substances, whereas a refractive index of one of the substances at a second wavenumber is approximately the same as a refractive index of another one of the substances at the second wavenumber. The electro-magnetic radiation can be controlled such that the first wavenumber substantially matches the first wavenumber to reduce scattering within the portion.

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INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER INV. G01N21/35		
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) G01N		
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		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	LEWIS E, ET AL: "Applications of Fourier transform infrared imaging microscopy in neurotoxicity. Imaging Brain Structure and Function" IMAGING BRAIN STRUCTURE AND FUNCTION, vol. 820, 1997, pages 234-247, XP002443230 the whole document	1, 10, 12-14, 26
X	US 6 274 871 B1 (DUKOR RINA K [US] ET AL) 14 August 2001 (2001-08-14) figure 3	1, 10, 12-14, 26
Y	JOO C, ET AL: OPTICS LETTERS, vol. 30, no. 16, 2005, pages 2131-2133, XP002443231 the whole document	2-9, 11
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<input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C.		
<input checked="" 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 *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 <p style="text-align: center;">19 July 2007</p>	Date of mailing of the International search report <p style="text-align: center;">13/08/2007</p>	
Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Authorized officer <p style="text-align: center;">CROUCHER, J</p>	

INTERNATIONAL SEARCH REPORT

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C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	GUO B, ET AL: "Laser-based mid-infrared reflectance imaging of biological tissues" OPTICS EXPRESS, vol. 12, no. 1, 2004, pages 208-218, XP002443232 the whole document -----	2-9, 11

INTERNATIONAL SEARCH REPORT

International application No.
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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.: 15-25, 27
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.

Continuation of Box II.2

Claims Nos.: 15-25, 27

The present application contains two independent apparatus Claims (Claims 1 and 15) and two independent method Claims (Claims 26 and 27).

The subject-matter of Claims 15 and 27 is completely unclear and does not appear to be supported by the description. No search has therefore been carried out regarding these Claims.

The extent of the search was consequently limited to Claims 1 and 26, which appear to comprise a reasonable definition of what is understood to be the invention for which protection is sought.

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/US2007/060657

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 6274871	B1	NONE	