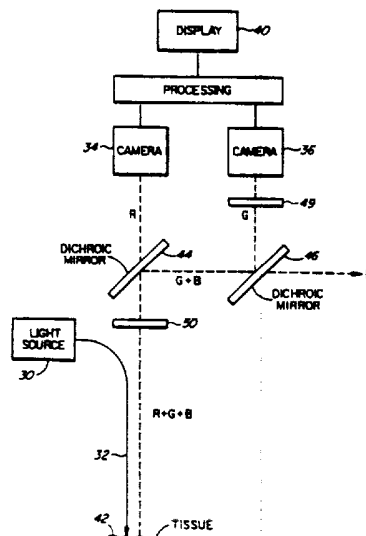




INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

<p>(51) International Patent Classification ⁶ : A61B 5/00, 1/05</p>	<p>A3</p>	<p>(11) International Publication Number: WO 95/26673</p> <p>(43) International Publication Date: 12 October 1995 (12.10.95)</p>
<p>(21) International Application Number: PCT/CA95/00171</p> <p>(22) International Filing Date: 24 March 1995 (24.03.95)</p> <p>(30) Priority Data: 08/218,662 28 March 1994 (28.03.94) US</p> <p>(71) Applicant: XILLIX TECHNOLOGIES CORPORATION [CA/CA]; 300-13775 Commerce Parkway, Richmond, British Columbia V6V 2V4 (CA).</p> <p>(72) Inventors: PALCIC, Branko; 5357 Trafalgar Street, Vancouver, British Columbia V6N 1B8 (CA). MACAULAY, Calum; 5791 Prince Albert Street, Vancouver, British Columbia V5Z 3E1 (CA). LAM, Stephen; 5512 Wycliffe Road, Vancouver, British Columbia V6T 2E3 (CA). JAGGI, Bruno; 2861 West 34rd Avenue, Vancouver, British Columbia V6K 1M8 (CA).</p> <p>(74) Agents: CLARK, Neil, S. et al.; Smart & Biggar, 1010- 510 Burrard Street, Vancouver, British Columbia V6C 3A8 (CA).</p>		<p>(81) Designated States: CA, JP, European patent (AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE).</p> <p>Published <i>With international search report.</i> <i>Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i></p> <p>(88) Date of publication of the international search report: 23 November 1995 (23.11.95)</p>

(54) Title: APPARATUS AND METHOD FOR IMAGING DISEASED TISSUE USING INTEGRATED AUTOFLUORESCENCE



(57) Abstract

An apparatus and method for imaging diseases in tissue are presented. The apparatus employs a light source for producing excitation light to excite the tissue to generate autofluorescence light and for producing illumination light to generate reflected and back scattered light (remittance light) from the tissue. Optical sensors are used to receive the autofluorescence light and the remittance light to collect an autofluorescence light image and a remittance light image. A filter acts to integrate the autofluorescence image over a range of wavelengths in which the autofluorescence intensity for normal tissue is substantially different from the autofluorescence intensity for diseased tissue to establish an integrated autofluorescence image of the tissue. The remittance light image provides a background image to normalize the autofluorescence image to account for image non-uniformity due to changes in distance, angle and illumination intensity. A monitor displays the integrated autofluorescence image and the remittance light image to produce a normalized image in which diseased tissue is distinguishable from normal tissue. The optical sensor can be installed adjacent the end of an endoscope probe inserted into a body cavity. A method for imaging diseased tissue using an integrated fluorescence image and a normalizing remittance image is also disclosed.

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INTERNATIONAL SEARCH REPORT

Intern. Application No
PCT/CA 95/00171

A. CLASSIFICATION OF SUBJECT MATTER
IPC 6 A61B5/00 A61B1/05

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)
IPC 6 A61B G01N H04N

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)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	EP,A,0 512 965 (XILLIX TECHNOLOGIES CORPORATION) 11 November 1992 see the whole document	1-3,7-9, 11,14, 15,17-23
Y	---	29,30, 32-39, 41,42
Y	US,A,4 786 813 (S. SVAMBERG ET AL.) 22 November 1988 cited in the application see the whole document	1-3,7-9, 11,14, 15,17-23
A	US,A,5 117 466 (T. N. BUICAN ET AL.) 26 May 1992 see the whole document ---	1,21
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Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

* Special categories of cited documents :

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Date of the actual completion of the international search

12 October 1995

Date of mailing of the international search report

02. 11. 95

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Ferrigno, A

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INTERNATIONAL SEARCH REPORT

Intern al Application No
PCT/CA 95/00171

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

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Y	US,A,4 878 113 (NAKAMURA KAZUNARI) 31 October 1989 see the whole document ---	29,30, 32-39, 41,42
A	US,A,4 928 172 (UEHARA MASAO ET AL) 22 May 1990 see column 4, line 57 - column 9, line 28 ---	29,30
A	US,A,4 631 582 (NAGASAKI TATSUO ET AL) 23 December 1986 see the whole document ---	29,30
A	US,A,4 768 089 (KATO HARUO) 30 August 1988 see abstract ---	29,30
A	EP,A,0 487 143 (PHILIPS ELECTRONICS UK LTD ;PHILIPS NV (NL)) 27 May 1992 see the whole document -----	29,30

INTERNATIONAL SEARCH REPORT

International application No.

PCT/CA95/00171

Box I Observations where certain claims were found unsearchable (Continuation of item 1 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 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:

Claims: 29-42

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.

INTERNATIONAL SEARCH REPORT

Information on patent family members

Intern: al Application No

PCT/CA 95/00171

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