Abstract: A reflection-mode photoacoustic endoscope includes a light source configured to emit a light pulse, a signal detection or transmission unit configured to detect or emit an ultrasonic pulse, and a rotatable reflector. The rotatable reflector is configured to reflect at least one of the light pulse and the ultrasonic pulse into a target area of an object, and reflect a response signal to the signal detection unit. The response signal is one of a photoacoustic wave generated by the object responsive to the light pulse and an ultrasonic pulse echo generated by the object responsive to the ultrasonic pulse.
A. CLASSIFICATION OF SUBJECT MATTER

A61B 1/00(2006.01)i

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)

A61B 1/00

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

Korean utility models and applications for utility models

Japanese utility models and applications for utility models

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

eKOMPASS(KIPO internal) & Keywords endoscope, ultrasonic, mirror, imaging

C. DOCUMENTS CONSIDERED TO BE RELEVANT

<table>
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<tr>
<th>Category*</th>
<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
<th>Relevant to claim No</th>
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<tbody>
<tr>
<td>X</td>
<td>US 2006-0058614 A1 (Kazuhiro Tsuji) 16 March 2006 See abstract; paragraphs 0027-0031, 0033, 0036-0045, 0060, claims 1-10 and figures 1-4.</td>
<td>1-17</td>
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<td>A</td>
<td>US 2005-143664 A1 (Zhongping Chen, Peter Tran) 30 June 2005 See abstract; paragraphs 0037, 0038; claims 1-3, 13, 14 and figures 1, 2.</td>
<td>1-17</td>
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<tr>
<td>A</td>
<td>WO 2007-148239 A2 (BURCHER, Michael) 27 December 2007 See abstract; claims 1-10, 22, 23 and figure 1.</td>
<td>1-17</td>
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</tbody>
</table>

☐ 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 application or patent 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 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

30 AUGUST 2010 (30 08 2010)

Date of mailing of the international search report

31 AUGUST 2010 (31.08.2010)

Name and mailing address of the ISA/KR

Korean Intellectual Property Office

Government Complex-Daejeon, 139 Seonsan-ro, Seo-gu, Daejeon 302-701, Republic of Korea

Facsimile No 82-42-472-7140

Authorized officer

CHOI, Cha Hee

Telephone No 82-42-481-5733

Form PCT/ISA/210 (second sheet) (My 2009)
**INTERNATIONAL SEARCH REPORT**

**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. 18-20 because they relate to subject matter not required to be searched by this Authority, namely:

   Claims 18-20 pertain to methods for treatment of the human or animal body by therapy, as well as diagnostic methods, and thus relate to a subject matter which this International Searching Authority is not required, under Article 17(2)(a)(i) of the PCT and Rule 39 l(iv) of the Regulations under the PCT, to search.

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 64(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:

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 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.

Form PCT/ISA/210 (continuation of first sheet (2)) (July 2009)
<table>
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<td>JP 2006-055236 A</td>
<td>02.03.2006</td>
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<td>US 2005-143664 A1</td>
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<td>EP 2034878 A2</td>
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