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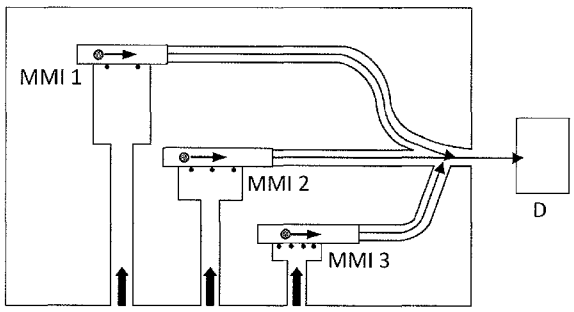
— *with international search report (Art. 21(3))*

— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))*

(88) Date of publication of the international search report:
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(54) Title: MULTIPLEX FLUORESCENT PARTICLE DETECTION USING SPATIALLY DISTRIBUTED EXCITATION

FIG. 3A



(57) Abstract: A chip-scale optical approach to performing multi-target detection is based on molecular biosensing using fiber-optic based fluorescence or light scattering detection in liquid-core waveguides. Multiplexing methods are capable of registering individual nucleic acids and other optically responsive particles, and are ideal for amplification-free detection in combination with the single molecule sensitivity of optofluidic chips. This approach overcomes a critical barrier to introducing a new integrated technology for amplification-free molecular diagnostic detection. Specific examples of liquid-core optical waveguides and multi-mode interferometers are described; however, they can be implemented in a number of different ways as long as a series of excitation spots is created whose spacing varies with the excitation wavelength.

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INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER

G01N 21/64(2006.01)i, G01N 21/47(2006.01)i, G01N 15/14(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)
G01N 21/64; G02B 6/26; G02B 6/122; G01N 21/59; G02B 6/10

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: interferometric, excitation, wavelength and scattering

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	CHUN-HAO CHAN et al. Scattering-Based Cytometric Detection Using Integrated Arrayed Waveguides with Microfluidics, IEEE Photonics technology letters, 15 March 2007, Vol.19, No.6, pp.441-443	1-4,11,14-15
A	See page 442, II. line 1 - page 443, IV. line 8 and figures 1-3.	5-10,12-13,16-20
Y	KIICHI HAMAMOTO et al. First demonstration of novel active multi-mode interferometer (MMI) LDs integrated with 1st order-mode permitted waveguides, IEICE Electronics Express, 10 July 2005, Vol.2, No.13, pp.399-403	1-4,11,14-15
A	See page 401, 2. line 1 - page 403, 4. line 6 and figures 1-3.	5-10,12-13,16-20
A	US 2003-0072521 A1 (KOHKI MUKAI) 17 April 2003 See paragraph 47 - paragraph 118 and figures 1A-14C.	1-20
A	US 2009-0175586 A1 (SCHMIDT HOLGER et al.) 09 July 2009 See paragraph 26 - paragraph 69 and figures 1A-6C.	1-20
A	US 2008-0278710 A1 (SCHMIDT HOLGER et al.) 13 November 2008 See paragraph 20 - paragraph 75 and figures 1-6.	1-20

☐ 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
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"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
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Name and mailing address of the ISA/KR	Authorized officer
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INTERNATIONAL SEARCH REPORT

Information on patent family members

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		US 2004-0141750 A1	22.07.2004
		US 6771847 B2	03.08.2004
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