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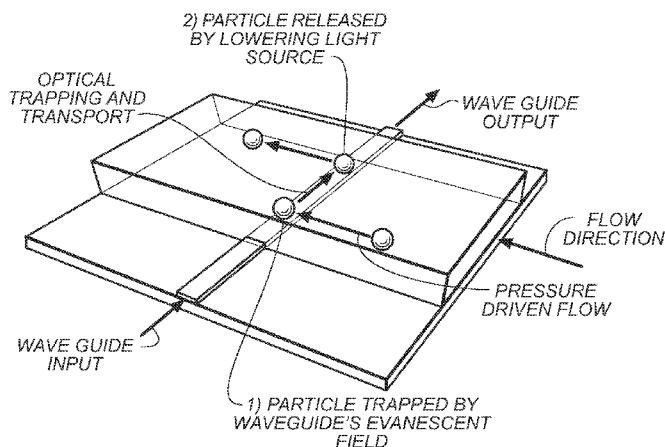
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(54) Title: INTEGRATED OPTOFLUIDIC SYSTEM USING MICROSPHERES

**FIG. 1**

(57) Abstract: An integrated optofluidic system for trapping and transporting particles for analysis is provided comprising a planar substrate; a microfluidic channel; and a waveguide integrated with the channel. A microsphere particle in the integrated optofluidic system can act as a cavity, allowing light to circulate many thousands of times around the circumference of the microsphere. Optical trapping and transport is used for nanoscale positioning to excite the microsphere resonances. Sensitive measurements on molecules can be accomplished by monitoring changes in whispering gallery modes (WGMs) that propagate around the circumference of the microsphere. By using a broadband or supercontinuum light source, a microsphere can be trapped and many WGM resonances can be excited through the visible and near-infrared wavelengths simultaneously. After the resonances are measured using the waveguide transmission, the microsphere can be freed by decreasing the optical power and the process repeated with a different microsphere.



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B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

G01N 35/00; C12Q 1/00; G01N 33/543; B32B 3/10; C12M 3/00; C12M 1/34

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: microfluidic, optofluidic, trapping, transporting, waveguide and supercontinuum

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2007-0031819 A1 (KOSCHWANEZ, JOHN et al.) 8 February 2007 See Paragraphs [58-80]; Claims 37-46; Figures. 4-32.	1-32
A	US 2006-0286680 A1 (KANG, KYUNG AIH et al.) 21 December 2006 See Paragraphs [44-119]; Claims 1-21; Figures. 17A-17C, 23-25.	1-32
A	WO 2007-051170 A2 [(THE REGENTS OF THE UNIVERSITY OF CALIFORNIA), 3 May 2007 See Paragraphs [30-33, 55]; Claims 1-6, 28; Figures. 1(a)-6.	1-32
A	US 2003-0096081 A1 (LAVALLEE, GUY P. et al.), 22 May 2003 See Paragraphs [21-58]; Claims 1, 10, 23, 55; Figures. 1-5.	1-32



Further documents are listed in the continuation of Box C.



See patent family annex.

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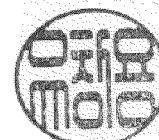
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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
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US 2006-0286680 A1	21.12.2006	US 2006-0024771 A1 US 2008-0160637 A1 WO 2006-088976 A3	02.02.2006 03.07.2008 24.08.2006
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