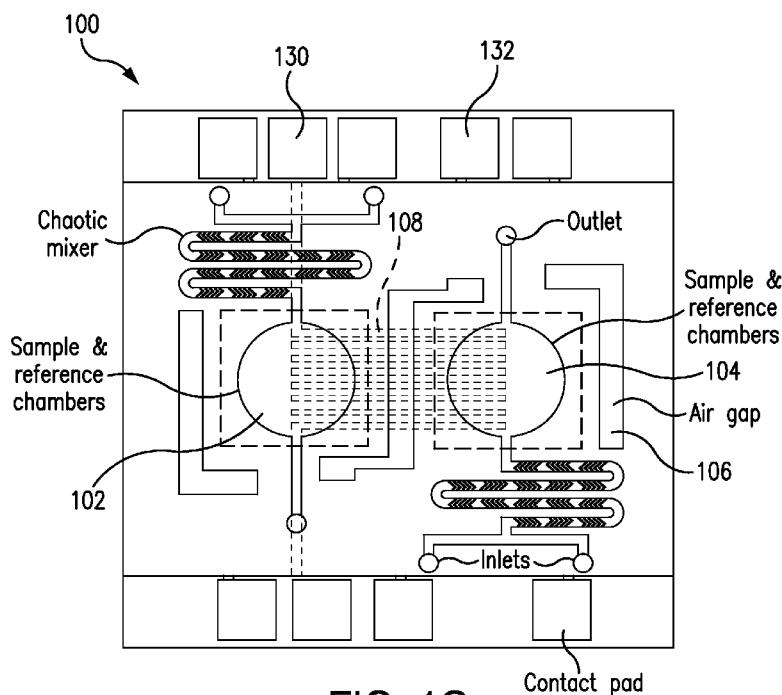




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[Continued on next page]

(54) **Title:** MEMS-BASED ISOTHERMAL TITRATION CALORIMETRY**FIG. 1C**

(57) **Abstract:** A microelectromechanical systems-based calorimetric device includes first and second micromixers and first and second thermally-isolated microchambers. A first solution including a sample and a reagent is introduced to the first microchamber via the first micromixer, and a second solution including a sample and a buffer is introduced to the second microchamber via the second micromixer. A thermopile measures the differential temperature between the first microchamber and the second microchamber and outputs a voltage representative of the difference. The output voltage can be used to calculate reaction parameters.

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A. CLASSIFICATION OF SUBJECT MATTER IPC(8) - G01K 17/06, 17/08; G01N 25/20 (2013.01) USPC - 374/32, 33, 36 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(8): G01K 17/04, 17/06, 17/08; G01N 25/20, 25/32, 25/48 (2013.01) USPC: 374/32, 33, 36, 31, 10, E17.001; 422/51 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 practicable, search terms used) MicroPatent (US-G, US-A, EP-A, EP-B, WO, JP-bib, DE-C,B, DE-A, DE-T, DE-U, GB-A, FR-A); Google Scholar; Google; ProQuest Calori*, device, instrument, apparatus, measure, heat, micro*, mix*, thermally-isolated, insulated, temperature, thermoelectric, sensor, detector, chamber, differential, Microelectromechanical, Micro-electro-mechanical, microelectronic*, MEMS, MST		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WANG, L et al. 'Demonstration of MEMS-Based Differential Scanning Calorimetry for Determination of Thermodynamic Properties of Biomolecules.' Sensors and Actuators B, Vol. 134, pages 953-958; 22 July 2008; pages 953-957	1, 6-7, 10-11, 13-15, 17-21
Y		2-5, 8-9, 12, 16, 22-33
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X, P	WO 2012/116092 A1 (LIN, Q et al.) 30 August 2012; entire document	1-15, 17-33
A	US 7564267 B1 (PATTERSON, JM) 21 July 2009, entire document	1-33
A	US 2003/0072348 A1 (DANLEY, RL) 17 April 2003, entire document	1-33
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Date of the actual completion of the international search 30 November 2013 (30.11.2013)		Date of mailing of the international search report 11 DEC 2013
Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US, Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201		Authorized officer: Shane Thomas PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774