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(54) Title: DEVICE AND METHOD FOR FRAGMENTING MATERIAL BY HYDRODYNAMIC SHEAR

(57) Abstract: A device and method for use with a centrifuge for fragmenting solute or particulate material contained in a liquid sample are disclosed. The device includes a substrate adapted to be supported within a centrifuge tube, and providing a microchannel defining a plurality of shear regions. Material contained in a liquid sample applied to the device, with such supported in a centrifuge tube within a centrifuge, is fragmented by shearing as the sample is forced successively through the plurality of shear regions in the microchannel, when the selected centrifugal force applied to the tube.

WO 2004/067708 A3

**INTERNATIONAL SEARCH REPORT**

International application No.

PCT/US04/01034

<b>A. CLASSIFICATION OF SUBJECT MATTER</b>		
IPC(7) : G01N 1/18, 9/30, 35/00; B01L 3/00		
US CL : 422/72, 101, 102; 436/43, 45, 174, 177; 435/4,29,287.1, 287.2, , 288.1, 288.2		
According to International Patent Classification (IPC) or to both national classification and IPC		
<b>B. FIELDS SEARCHED</b>		
Minimum documentation searched (classification system followed by classification symbols)		
U.S. : 422/72, 100, 101, 102, 103; 436/43, 45, 174, 177, 180; 435/4,29,287.1, 287.2, 287.3, 287.6, 288.1, 288.2		
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) Please See Continuation Sheet		
<b>C. DOCUMENTS CONSIDERED TO BE RELEVANT</b>		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	WO 95/18851 A1 (BASTIAN) 13 July 1995, abstract and figure 3.	1-6, 11-32
Y, P	US 6,586,585 B1 (BASTIAN) 01 July 2003, column 3, lines 42-65, column 4, lines 4-18, and column 5, lines 4-45.	1-6, 11-32
Y	US 6,361,947 B1 (DONG et al) 26 March 2002, column 9, lines 1-13.	1-6, 11-32
Y	US 5,922,591 A (ANDERSON et al) 13 July 1999, column 11, lines 25-54.	1-6, 11-32
Y	US 3,882,021 A (AYRES) 06 May 1975, column 4, lines 24-30 and lines 56-67.	7-9
Y	US 4,920,056 A (DASGUPTA) 24 April 1990, column 2, lines 8-25.	7, 10
A	US 5,304,487 A (WILDING et al) 19 April 1994, whole document.	1-32
A	US 5,422,018 A (SAUNDERS et al) 06 June 1995, whole document.	1-32
<input type="checkbox"/> Further documents are listed in the continuation of Box C. <input type="checkbox"/> See patent family annex.		
* Special categories of cited documents:		
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"O"	document referring to an oral disclosure, use, exhibition or other means	"&" document member of the same patent family
"P"	document published prior to the international filing date but later than the priority date claimed	
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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. (703) 305-3230		Authorized officer Jill Warden <i>Jill Warden</i> Telephone No. 703-308-0661

**Continuation of B. FIELDS SEARCHED Item 3:**

EAST/USPAT, PGPUB; WEST/JPO, EPO, DERWENT

search terms: centrifuge tube, microcentrifuge tube, shear, fragment, channel, microchannel, DNA, polymer