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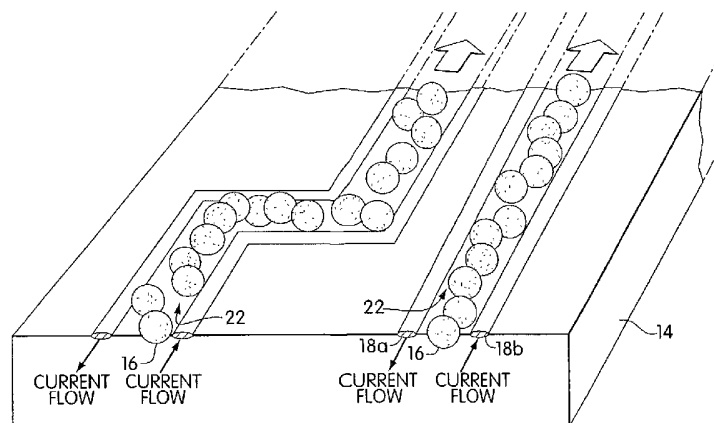
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[Continued on next page]

(54) Title: MICROMAGNETIC SYSTEMS AND METHODS FOR MICROFLUIDICS



(57) Abstract: The invention provides systems (10) and methods of manipulating biological or chemical species (12). The species (12) may be attached to a magnetic particle (16) which is manipulated using micro-magnetic fields. In some cases, the magnetic fields are generated by current carrying wires (18) that are patterned on a substrate (14). The magnetic fields define channels (22) on the surface of the substrate (14) in which the magnetic particles (16) and attached species (12) may be transported, positioned and stored. In other cases, the magnetic fields are generated by magnetic features located within the channels (22) on the surface of the substrate (14). Thus, the systems (10) and methods can manipulate biological or chemical species (12) on a microscale (e.g., less than 5 cm). Applications of the systems (10) and methods are in, but are not limited to, the fields of biotechnology, microanalysis, and microsynthesis.



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## INTERNATIONAL SEARCH REPORT

International application No.

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## A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) :B03C 1/00; G01N 27/00

US CL :209/39, 214, 225.1, 232; 422/68.1, 82.01; 210/222

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)

U.S. : 209/39, 213, 214, 215, 225.1, 227, 213, 232; 422/58, 68.1, 82.01; 210/222

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched  
NONE

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

EAST text search

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X --- Y	US 5,655,665 A (ALLEN et al.) 12 August 1997 (12/08/1997), see the entire document.	1-3, 5-12, 14-23, 25-27, 29-43, 45- 47, 49-57, 59-65, 68-91, 94-103 and 106 ----- 4, 13, 24, 28, 48, 58, 66, 67, 92, 93, 104 and 105
X --- Y	US 5,055,390 A (WEAVER et al.) 08 October 1991 (08/10/1991), see the entire document.	44 ----- 13 and 28



Further documents are listed in the continuation of Box C.



See patent family annex.

"A"	document defining the general state of the art which is not considered to be of particular relevance	"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
"E"	earlier document published on or after the international filing date	"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
"L"	document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"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
"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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C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5,876,593 A (LIBERTI et al.) 02 March 1999 (02/03/1999), see the entire document.	
A	US 5,872,010 A (KARGER et al.) 16 February 1999 (16/02/1999), see the entire document.	