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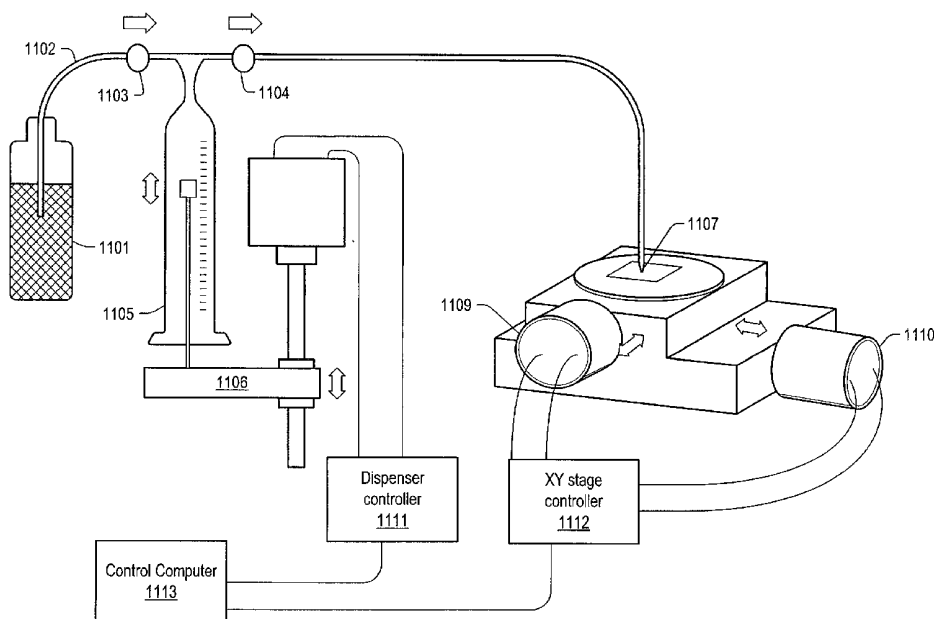
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60/218,754 17 July 2000 (17.07.2000) US
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- Published:**  
— with international search report  
— before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

[Continued on next page]

(54) Title: METHOD AND SYSTEM OF AUTOMATIC FLUID DISPENSING FOR IMPRINT LITHOGRAPHY PROCESSES



(57) Abstract: Disclosed herein is an automatic fluid dispensing method and system for dispensing fluid on the surface of a plate-like material, or substrate, including a semiconductor wafer for imprint lithography processes. The dispensing method uses fluid dispenser and a substrate stage that may generate relative lateral motions between a fluid dispenser tip a substrate. Also described herein are methods and devices for creating a planar surface on a substrate using a substantially unpatterned planar template.



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*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 01/22536

A. CLASSIFICATION OF SUBJECT MATTER  
 IPC 7 G03F7/00 G03F7/16

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 7 G03F

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 practical, search terms used)

EPO-Internal, PAJ, WPI Data, INSPEC

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
P,X	WO 01 33300 A (UNIV TEXAS AT AUSTIN) 10 May 2001 (2001-05-10)  the whole document ---	91-107, 109-126, 128-130, 148
X	HAISMA J ET AL: "MOLD-ASSISTED NANOLITHOGRAPHY: A PROCESS FOR RELIABLE PATTERN REPLICATION" JOURNAL OF VACUUM SCIENCE AND TECHNOLOGY: PART B, AMERICAN INSTITUTE OF PHYSICS. NEW YORK, US, vol. 14, no. 6, 1 November 1996 (1996-11-01), pages 4124-4128, XP000721137 ISSN: 0734-211X the whole document ---	1-8, 11, 12, 19-21, 23-33, 56-64, 67, 68, 71, 73-76, 79-89, 148
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Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

° Special categories of cited documents:

- \*A\* document defining the general state of the art which is not considered to be of particular relevance
- \*E\* earlier document but published on or after the international filing date
- \*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)
- \*O\* document referring to an oral disclosure, use, exhibition or other means
- \*P\* document published prior to the international filing date but later than the priority date claimed

- \*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
- \*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
- \*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.
- \*&\* document member of the same patent family

Date of the actual completion of the international search

18 July 2002

Date of mailing of the international search report

25/07/2002

Name and mailing address of the ISA

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## INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 01/22536

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	COLBURN M ET AL: "Step and flash imprint lithography: a new approach to high-resolution patterning" EMERGING LITHOGRAPHIC TECHNOLOGIES III, SANTA CLARA, CA, USA, 15-17 MARCH 1999, vol. 3676, pt.1-2, pages 379-389, XP002126733 Proceedings of the SPIE - The International Society for Optical Engineering, 1999, SPIE-Int. Soc. Opt. Eng, USA ISSN: 0277-786X	
X	JP 02 192045 A (FUJITSU LTD) 27 July 1990 (1990-07-27) figures 1-6	1
X	WO 87 02935 A (EASTMAN KODAK CO) 21 May 1987 (1987-05-21) the whole document	1

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US 01/22536

## Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1.  Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
  
2.  Claims Nos.: 34, 90, 131-147  
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:  
see FURTHER INFORMATION sheet PCT/ISA/210
  
3.  Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1.  As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
  
2.  As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
  
3.  As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
  
4.  No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

### Remark on Protest

- The additional search fees were accompanied by the applicant's protest.
- No protest accompanied the payment of additional search fees.

**FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210**

Continuation of Box I.2

Claims Nos.: 34, 90, 131-147

"Devices" solely defined by their size or by the method used for their manufacture do not comprise any features which can be used to differentiate them from any "devices", created artificially or naturally, of the same or similar size or function. The claims therefor lack meaningful characterizing and searchable features.

The applicant's attention is drawn to the fact that claims, or parts of claims, relating to inventions in respect of which no international search report has been established need not be the subject of an international preliminary examination (Rule 66.1(e) PCT). The applicant is advised that the EPO policy when acting as an International Preliminary Examining Authority is normally not to carry out a preliminary examination on matter which has not been searched. This is the case irrespective of whether or not the claims are amended following receipt of the search report or during any Chapter II procedure.

## INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 01/22536

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
WO 0133300	A	10-05-2001	AU 1448801 A WO 0133300 A2	14-05-2001 10-05-2001
JP 02192045	A	27-07-1990	NONE	
WO 8702935	A	21-05-1987	EP 0245461 A1 WO 8702935 A1	19-11-1987 21-05-1987