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Published:

- with international search report (Art. 21(3))
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))

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(54) Title: LITHOGRAPHY SYSTEM FOR PROCESSING A TARGET, SUCH AS A WAFER, A METHOD FOR OPERATING A LITHOGRAPHY SYSTEM FOR PROCESSING A TARGET, SUCH AS A WAFER AND A SUBSTRATE FOR USE IN SUCH A LITHOGRAPHY SYSTEM

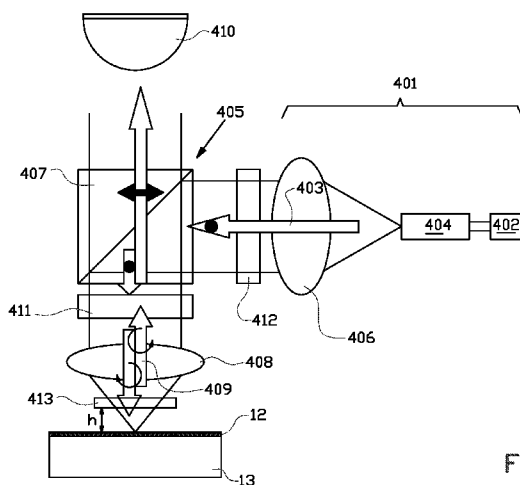


FIG. 4

(57) Abstract: The invention relates to a lithography system for processing a target, such as a wafer and a substrate for use in such a lithography system. The lithography system comprises a beam source arranged for providing a patterning beam, a final projection system arranged for projecting a pattern on the target surface, a chuck arranged for supporting the target and a mark position system arranged for detecting a position mark on a surface.



INTERNATIONAL SEARCH REPORT

International application No
PCT/NL2012/050270

A. CLASSIFICATION OF SUBJECT MATTER
INV. G03F9/00
ADD.
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)
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 practicable, search terms used)
EPO-Internal, INSPEC, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2010/245848 A1 (SAKAMOTO NORITOSHI [JP]) 30 September 2010 (2010-09-30) figure 8 -----	1-7,12, 13,22

Further documents are listed in the continuation of Box C.

See patent family 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 application or patent 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

22 February 2013

Date of mailing of the international search report

10/05/2013

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/NL2012/050270

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 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.: 23
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 No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

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

see additional sheet

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 fees, this Authority did not invite payment of additional fees.

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.:
1-7, 12, 13, 22

Remark on Protest

- The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-7, 12, 13, 22

Lithography system having an optical off-axis mark position detection system with an alignment sensor focusing laser polarized alignment light on the wafer surface and detecting reflected light from the wafer surface.

2. claims: 8-11

Lithography system having an optical off-axis mark position detection system with an alignment sensor focusing alignment light on the wafer surface and detecting reflected light from the wafer surface, further including a height measurement system.

3. claims: 14-18, 24-43

Lithographic system having an optical off-axis mark position detection system with an alignment sensor focusing alignment light on the wafer surface and detecting reflected light from the wafer surface and using specific alignment marks. Substrate with alignment marks having structural details.

4. claims: 19-21

Lithography apparatus having an optical off-axis mark position detection system with an alignment sensor focusing alignment light on the wafer surface and detecting reflected light from the wafer surface wherein a support connects the mark position system to the final projection system and further mechanical details thereof.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Continuation of Box II.2

Claims Nos.: 23

Claim 23 is not in compliance with the clarity requirement of Article 6 PCT. Method claim 23 fails to specify further details of the step of moving the surface or to define the interrelation between the moving step and the steps of guiding the reflected alignment light on the detector and of detecting the position of the mark. A technical function or effect cannot hence be assigned to the moving step and the scope of the claim cannot hence be ascertained. The non-compliance with the substantive provisions is to such an extent, that the search was performed taking into consideration the non-compliance in determining the extent of the search (PCT Guidelines, 9.19 and 9.24). The extent of the search was consequently limited to lithography systems according to claims 1-7, 12, 13 and 22 and operating methods thereof.

The applicant's attention is drawn to the fact that 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. If the application proceeds into the regional phase before the EPO, the applicant is reminded that a search may be carried out during examination before the EPO (see EPO Guidelines C-IV, 7.2), should the problems which led to the Article 17(2) declaration be overcome.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/NL2012/050270

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2010245848 A1	30-09-2010	JP 2010225940 A	07-10-2010
		KR 20100106918 A	04-10-2010
		TW 201035516 A	01-10-2010
		US 2010245848 A1	30-09-2010
		US 2012154823 A1	21-06-2012
