(54) Title: A SEMICONDUCTOR SUBSTRATE PROCESSING METHOD

(57) Abstract: According to one aspect of the invention, a semiconductor substrate processing apparatus and a method for processing semiconductor substrates are provided. The method may include providing a semiconductor substrate having a surface and a plurality of features on the surface, each feature being positioned on the surface at a first respective point in a first coordinate system, plotting the position of each feature at a second respective point in a second coordinate system; and generating a translation between the first and the second coordinate systems. The generating of the translation may include calculating an offset between the first and the second coordinate systems. The calculating of the offset may include calculating an offset distance between a reference point of the first coordinate system and a reference point of the second coordinate system and calculating an offset angle between an axis of the first coordinate system and an axis of the second coordinate system.
Published: with international search report

(88) Date of publication of the international search report:
21 December 2006

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

A. CLASSIFICATION OF SUBJECT MATTER

INV. H01L21/00 H01L21/68

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)

H01L

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

C. DOCUMENTS CONSIDERED TO BE RELEVANT

<table>
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<tr>
<th>Category</th>
<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
<th>Relevant to claim No.</th>
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<tbody>
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<td>X</td>
<td>US 5 808 910 A (IRIE ET AL) 15 September 1998 (1998-09-15) claim 1; figure 1</td>
<td>1-28</td>
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<td>X</td>
<td>US 5 805 866 A (MAGOME ET AL) 8 September 1998 (1998-09-08) column 1, line 57 - column 2, line 58; figures 10,11</td>
<td>1-28</td>
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</table>

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 document but published on or after the international filing date
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  *O* document referring to an oral disclosure, use, exhibition or other means
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"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
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*"&" document member of the same patent family

Date of the actual completion of the international search

4 May 2006

Date of mailing of the international search report

14.09.06

Name and mailing address of the ISA

European Patent Office, P.B. 5018 Patentliaan 2 NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax. (+31-70) 340-3019

Authorized officer

Angermeier, Detlef

Form PCTISA/110 (second sheet) (April 2002)
<table>
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# INTERNATIONAL SEARCH REPORT

**Box 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.: 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:

3. [ ] Claims Nos.: because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 8.4(a).

**Box 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 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. [x] 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.:

   1–28

**Remark on Protest**

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

Form PCT/ISA/210 (continuation of first sheet (2)) (January 2004)
This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-28

The first invention is directed to a method of calibrating a semiconductor substrate on a substrate holder.

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2. claims: 29-39

The second invention concerns a semiconductor processing system with an electromagnetic radiation source connected to a frame to emit electromagnetic radiation.

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3. claims: 40-42

The third invention pertains to a method of supporting and moving a semiconductor substrate by a robotic arm.

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<td>US 5808910</td>
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