Abstract: Test pads, methods, and systems for measuring properties of a wafer are provided. One test pad formed on a wafer includes a test structure configured such that one or more electrical properties of the test structure can be measured. The test pad also includes a conductive layer formed between the test structure and the wafer. The conductive layer prevents structures located under the test structure from affecting the one or more electrical properties of the test structure during measurement. One method for assessing plasma damage of a wafer includes measuring one or more electrical properties of a test structure formed on the wafer and determining an index characterizing the plasma damage of the test structure using the one or more electrical properties. In addition, methods and systems for controlling deposition of a charge on the wafer for measurement of one or more electrical properties of the wafer are provided. One system includes a corona source configured to deposit the charge on the wafer and a sensor configured to measure one or more conditions within the corona source. This system also includes a control subsystem configured to alter one or more parameters of the corona source based on the one or more conditions. Another system includes a corona source configured to deposit the charge on the wafer and a mixture of gases disposed within a discharge chamber of the corona source during the deposition of the charge. The mixture of gases alters one or more parameters of the charge deposited on the wafer.
INTERNATIONAL SEARCH REPORT

A. CLASSIFICATION OF SUBJECT MATTER
   IPC(8) - G01R 31/02 (2007.01)
   USPC - 324/755
   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)
   USPC - 324/755
   Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
   USPC - 324/500, 537, 754-759 (text search - see terms below)
   Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
   PubWEST(USPT, PGPB, EPAP, JPAB); DialogPRO (Engineering); Google Scholar
   Search term: test pad, wafer, conductive layer

C. DOCUMENTS CONSIDERED TO BE RELEVANT

<table>
<thead>
<tr>
<th>Category</th>
<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
<th>Relevant to claim No.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>4-8, 14-16, 21-25, 28, 31, 32, 42</td>
</tr>
<tr>
<td>Y</td>
<td>US 5,977,558 A (LEE) 02 November 1999 (02.11.1999), col 2, In 16-17</td>
<td>24</td>
</tr>
<tr>
<td>Y</td>
<td>US 6,202,029 B1 (VERKUIJL et al.) 13 March 2001 (13.03.2001), fig 1</td>
<td>28, 41, 42</td>
</tr>
</tbody>
</table>

Further documents are listed in the continuation of Box C.

Date of the actual completion of the international search
18 August 2007 (18.08.2007)

Date of mailing of the international search report
12 FEB 2008

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. 571-273-3201

Authorized officer:
Lee W. Young
PCT Helpdesk: 571-272-4300
PCT ISP: 571-272-7774

Form PCT/ISA/210 (second sheet) (April 2007)
INTERNATIONAL SEARCH REPORT

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.:
   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 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:

Group I: claims 1-43 are directed to a test pad formed on wafer for measuring one or more electrical properties.

Group II: claims 44-71 are directed to a method of assessing plasma damage on a wafer.

Group III: claims 72-98 are directed to a system and method of controlling charge deposition on a wafer, including a corona source.

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 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.:

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.

Form PCT/ISA/210 (continuation of first sheet (2)) (April 2007)