Title: IMPROVED METHOD FOR ETCHING VIAS

Abstract: An improved method for etching a substrate that reduces the formation of pillars is provided by the present invention. In accordance with the method, the residence time of an etch gas utilized in the process is decreased and the power of an inductively coupled plasma source used to dissociate the etch gas is increased. A low bias RF voltage is provided during the etching process. The RF bias voltage is ramped between different bias levels utilized during the etch process. An inductively coupled plasma confinement ring is utilized to force the reactive species generated in the inductively coupled plasma source over the surface of the substrate. These steps reduce or eliminate the formation of pillars during the etching process.
INTERNATIONAL SEARCH REPORT

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7)  :  H01L 21/302
US CL  :  438/710

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. : 438/604,710,714

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)
NONE

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>A</td>
<td>US 6,125,788 A (HILLS et al) 03 October 2000 (03.10.2000), column 4, lines 22-41.</td>
<td>1-5</td>
</tr>
<tr>
<td>A</td>
<td>US 2001/0000104 A1 (LI et al) 05 April 2001 (05.04.2001), paragraph 0027.</td>
<td>1-25</td>
</tr>
<tr>
<td>A</td>
<td>US 2001/0036744 A1 (TARAVADE et al) 01 November 2001 (01.11.2001), paragraph 0052.</td>
<td>1-25</td>
</tr>
</tbody>
</table>

☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

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"&" document member of the same patent family

Date of the actual completion of the international search
29 July 2003 (29.07.2003)

Date of mailing of the international search report
14 Nov 2003

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