Title: SILICON GAS INJECTOR AND METHOD OF MAKING

Abstract: A gas injector tube (40) usable in a batch thermal treatment oven including two silicon shells (54, 56) joined together with an adhesive formed of a fine silicon powder and a curable silica-forming agent, such as a spin-on glass, which is ultrasonically homogenized. The tube may have a gas outlet (52) on its distal end or be sealed with a silicon cap (86) and have side outlet holes (84) formed along its side. The silicon injector tube may be used in combination with a silicon tower and a silicon liner so that all bulk parts within the furnace hot zone are formed of silicon.

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

(88) Date of publication of the international search report:
4 October 2007

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
   IPC(8) - C23C 16/00, B32B 37/00, F16K 51/00 (2007.01)
   USPC - 118/715, 427/248.1, 432/006
   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 (8) - C23C 16/00, B32B 37/00, F16K 51/00 (2007.01)
   USPC 118/715, 427/248.1, 432/006
   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)
   PubWEST- Terms: reactive gas distribution manifold, silicon, microelectronics, gas injector, silicon gas manifold, injector, wafer fab, gas distribution, silicon tubing, silicon piping

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>Y</td>
<td>US 2004/0129203 A1 (Zehavi et al.) 08 July 2004 (08.07.2004), abstract; para [0005]-[0016], [0019], [0022], [0035], [0051]-[0057], fig 10, 11; claims 9-12</td>
<td>1-20, 23-24</td>
</tr>
<tr>
<td>X</td>
<td>US 2004/0213955 A1 (Boyle et al.) 28 October 2004 (28.10.2004), abstract, para [0053], [0029], [0041], Figs. 3 and 4</td>
<td>21, 22</td>
</tr>
<tr>
<td>Y</td>
<td>US 4,422,407 A (Bessot et al.) 27 December 1983 (27.12.1983), Abstract, Figure 1; col. 1, In 58+; Fig 3, portions of figs 8,9,10,11</td>
<td>1-20, 23-24</td>
</tr>
<tr>
<td>Y</td>
<td>US 5,192,371 A (Shuto et al.) 09 March 1993 (09.03.1993), Abstract, Fig. 1, Fig. 3, Col 2, In 9-12, In 31-45, Col 3, In 45-59;</td>
<td>1-20, 23-24</td>
</tr>
</tbody>
</table>

Further documents are listed in the continuation of Box C.

* 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

"D" 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
"Y" 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
"G" 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

Date of the actual completion of the international search
14 April, 2007 (14.04.2007)

Date of mailing of the international search report
02 AUG 2007

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 OSP: 571-272-7774