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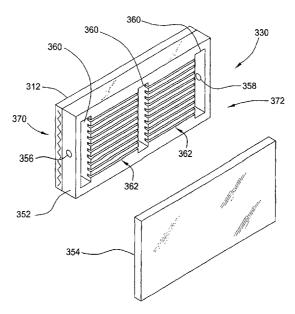
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[Continued on next page]

(54) Title: METHOD AND APPARATUS FOR SILICONE OXIDE DEPOSITION ON LARGE AREA SUBSTRATES



(57) Abstract: A method and apparatus for depositing a dielectric material at a rate of at least 4000 Angstroms per minute on a large area substrate that has a surface area of at least about 0.35 square meters is provided. In one embodiment, the dielectric material is silicon oxide. Also provided is a vaporizer comprising a plurality of grooves.



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a. classification of subject matter IPC 7 H01L21/316 C230 C23C16/448 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 7 H01L C23C 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 C. DOCUMENTS CONSIDERED TO BE RELEVANT Category ° Citation of document, with indication, where appropriate, of the relevant passages Relevant to claim No. χ US 6 167 834 B1 (COLLINS KENNETH S ET AL) 1 - 122 January 2001 (2001-01-02) column 16, lines 33-37; figure 2 column 21, line 49 - column 22, line 3 χ EP 0 435 088 A (APPLIED MATERIALS JAPAN ; 13 LINTEC CO LTD (JP)) 3 July 1991 (1991-07-03) column 4, line 1 - column 5, line 5; figures 1-3 EP 0 058 571 A (NAT RES DEV) 1 - 2525 August 1982 (1982-08-25) the whole document US 5 849 089 A (OKUMURA KATSUYA ET AL) 1-25 Α 15 December 1998 (1998-12-15) the whole document -/--Further documents are listed in the continuation of box C. χ Patent family members are listed in annex. ° Special categories of cited documents: \*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 "A" document defining the general state of the art which is not considered to be of particular relevance invention \*E\* earlier document but published on or after the international "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 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) "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 docu-ments, such combination being obvious to a person skilled "O" document referring to an oral disclosure, use, exhibition or other means in the art. document published prior to the international filing date but later than the priority date claimed "&" document member of the same patent family Date of the actual completion of the international search Date of mailing of the international search report 14 October 2004 21/10/2004 Name and mailing address of the ISA Authorized officer European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Kenevey, K Fax: (+31-70) 340-3016

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