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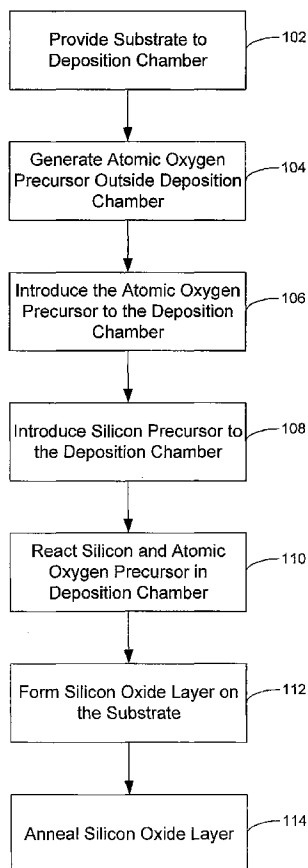
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(54) Title: CHEMICAL VAPOR DEPOSITION OF HIGH QUALITY FLOW-LIKE SILICON DIOXIDE USING A SILICON
CONTAINING PRECURSOR AND ATOMIC OXYGEN



(57) Abstract: Methods of depositing a silicon oxide layer on a substrate are described. The methods may include the steps of providing a substrate to a deposition chamber, generating an atomic oxygen precursor outside the deposition chamber, and introducing the atomic oxygen precursor into the chamber. The methods may also include introducing a silicon precursor to the deposition chamber, where the silicon precursor and the atomic oxygen precursor are first mixed in the chamber. The silicon precursor and the atomic oxygen precursor react to form the silicon oxide layer on the substrate, and the deposited silicon oxide layer may be annealed. Systems to deposit a silicon oxide layer on a substrate are also described.

WO 2007/140424 A3



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A. CLASSIFICATION OF SUBJECT MATTER

IPC(8) - C23C 16/40 (2007.10)

USPC - 257/E21.279, E21.547; 427/255.37

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 - 257/E21.279, E21.547; 427/255.37

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
USPC - 257/E21.273, E21.274, E21.279, E21.547; 427/255.37, 255.28, 255.29, 579, 588; 438/789, 790 and all relevant classifications (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,EPAB,JPAB); DialogPRO(Engineering); Google Scholar
Search Terms: semiconductor, silicon oxide layer, argon plasma, silane, oxygen, atomic oxygen, ozone

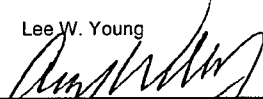
C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X ----- Y	US 2001/0054387 A1 (Frankel et al.) 27 December 2001 (27.12.2001), entire document especially Abstract and para [0008], [0077], [0200] and [0222], [0075], [0200], [0204], [0222], [0011], [0177], [0155], [0246] and [0255]	1-13 and 16-31 ----- 14 and 15
Y	US 2004/0079118 A1 (M'Saad et al.) 29 April 2004 (29.04.2004), para [0083]	14 and 15

Further documents are listed in the continuation of Box C.

* 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 invention
"A" document defining the general state of the art which is not considered to be of particular relevance	"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
"E" earlier application or patent but published on or after the international filing date	"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 documents, such combination being obvious to a person skilled in the art
"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)	"&" document member of the same patent family
"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	

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