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(54) Title: IMPROVED MULTILAYER ELECTROSTATIC CHUCK WAFER PLATEN

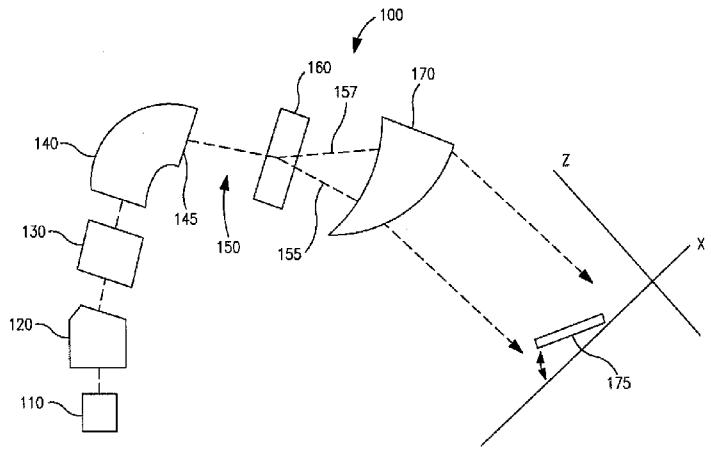


FIG. 1

(57) Abstract: This layered assembly utilizes two-piece construction, with an electrically nonconductive layer and a thermally conductive layer. Rather than using metal, the thermally conductive layer is made from a composite material, having both metal and a CTE modifying agent. This composite material may a coefficient of thermal expansion close to or identical to that of the nonconductive layer, thereby eliminating many of the drawbacks of the prior art. In one embodiment, the composite material is a mixture of aluminum and carbon (or graphite) fiber. In a further embodiment, one or more fluid conduits are placed in the mold before the layer is cast These conduits serve as the fluid passageways in the electrostatic chuck. In another embodiment, the composite material is a mixture of a semiconductor material, such as silicon, and aluminum where the conduits are formed by machining and bonding.

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A. CLASSIFICATION OF SUBJECT MATTER

H01L 21/683(2009.01)i, H01L 21/687(2006.01)i, H01L 21/265(2009.01)i

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)

H01L 21/683; B23Q 3/15; C23C 14/50; H01L 21/203; H01L 21/68; H02N 13/00

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Korean utility models and applications for utility models
Japanese utility models and applications for utility models
(Chinese Patents and application for patent)

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

eKOMPASS(KIPO internal) & Keywords: chuck, CTE, implating, CVD,PVD and similar terms

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	JP 2006-156691 A (KYOCERA CORP.) 15 June 2006 See paragraphs 48-62 and figures 1-2.	1-22
Y	JP 2001-223261 A (HITACHI LTD.) 17 August 2001 See paragraphs 36-67 and figures 1-5.	1-22
Y	JP 2000-243821 A (KYOCERA CORP.) 8 September 2000 See paragraphs 13-35 and figure 1.	1-22
Y	JP 11-323549 A (NHK SPRING CO., LTD.) 26 November 1999 See paragraphs 6-27 and figures 1-3.	1-22
Y	JP 08-316299 A (SOUZOU KAGAKU:KK et al.) 29 November 1996 See paragraphs 6-15 and figures 1-4.	1-22

☐ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

* Special categories of cited documents:
"A" document defining the general state of the art which is not considered to be of particular relevance
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"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
"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
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Date of the actual completion of the international search	Date of mailing of the international search report
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Information on patent family members

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
JP 2006-156691 A	15.06.2006	None	
JP 2001-223261 A	17.08.2001	None	
JP 2000-243821 A	08.09.2000	None	
JP 11-323549 A	26.11.1999	None	
JP 08-316299 A	29.11.1996	None	