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(54) Title: METHODS AND APPARATUS FOR LOW COST AND HIGH PERFORMANCE POLISHING TAPE FOR SUBSTRATE BEVEL AND EDGE POLISHING IN SEMICONDUCTOR MANUFACTURING

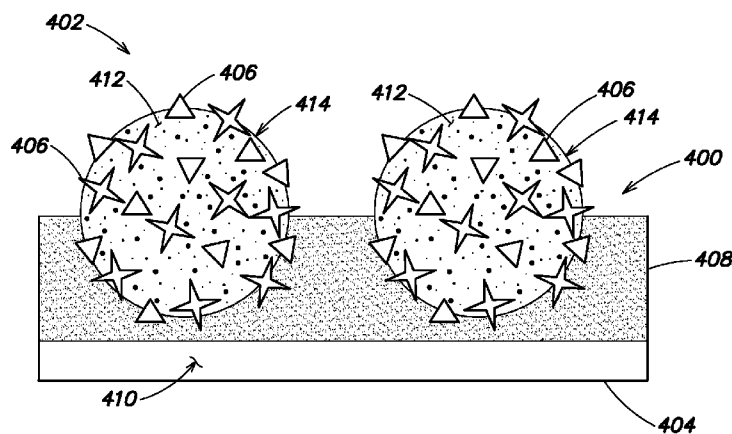


FIG. 4B

(57) Abstract: Apparatus and methods are provided relating to polishing a substrate using a polishing device, such as a polishing tape. The polishing device includes a base having a first surface; a resin layer adhering to the first surface of the base; and a plurality of abrasive beads affixed to the first surface by the resin layer, the plurality of abrasive beads comprising a plurality of abrasive particles suspended in binder material; wherein the plurality of abrasive beads and the resin layer comprise an abrasive side of the polishing device adapted to contact the substrate. Numerous other aspects are provided.



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A. CLASSIFICATION OF SUBJECT MATTER***H01L 21/304(2006.01)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)

B24B; B24D; H01L 21/304

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 since 1975.
Japanese utility models and applications for utility models since 1975.

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

e-Kompass "CMP, particle, tape, and wafer"

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	JP 2008-036783 A (SONY CORP.) 21 February 2008 See the abstract; paragraphs <15>-<28>; claims 1, 6; Figs. 1-3.	1-15
A	JP 2006-142388 A (NIHON MICRO COATING CO., LTD.) 08 June 2006 See the abstract; paragraphs <24>-<37>; claims 1-5; Fig. 1.	1-15
A	JP 2007-326175 A (NIHON MICRO COATING CO., LTD.) 20 December 2007 See the abstract; paragraphs <22>-<40>; claims 1-3; Fig. 1.	1-15

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

* Special categories of cited documents:

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"&" document member of the same patent family

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INTERNATIONAL SEARCH REPORT

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
JP 2008-036783 A	21.02.2008	KR 10-2008-0013746 A US 2008-113509 A1	13.02.2008 15.05.2008
JP 2006-142388 A	08.06.2006	EP 1813388 A1 EP 1813388 A4 KR 10-2007-0085030 A US 2006-252355 A1 WO 2006-054378 A1	01.08.2007 16.01.2008 27.08.2007 09.11.2006 26.05.2006
JP 2007-326175 A	20.12.2007	None	