

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
16 July 2009 (16.07.2009)

PCT

(10) International Publication Number
WO 2009/088832 A1

(51) International Patent Classification:

B24B 37/04 (2006.01) **B24B 51/00** (2006.01)
B24B 49/03 (2006.01)

(21) International Application Number:

PCT/US2008/088452

(22) International Filing Date:

29 December 2008 (29.12.2008)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

11/967,743 31 December 2007 (31.12.2007) US

(71) Applicant (for all designated States except US): **MEMC ELECTRONIC MATERIALS, INC.** [US/US]; 501 Pearl Drive, St. Peters, MO 63376 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **BHAGAVAT, Sumeet, S.** [IN/US]; c/o MEMC Electronic Materials, Inc., 501 Pearl Drive, St. Peters, MO 63376 (US). **VANDAMME, Roland, R.** [US/US]; c/o MEMC Electronic Materials, Inc., 501 Pearl Drive, St. Peters, MO 63376

(US). **KOMURA, Tomomi** [JP/JP]; c/o MEMC Electronic Materials, Inc., 501 Pearl Drive, St. Peters, MO 63376 (US). **KANEKO, Tomohiko** [JP/JP]; c/o MEMC Electronic Materials, Inc., 501 Pearl Drive, St. Peters, MO 63376 (US). **KAZAMA, Takuto** [JP/JP]; c/o MEMC Electronic Materials, Inc., 501 Pearl Drive, St. Peters, MO 63376 (US).

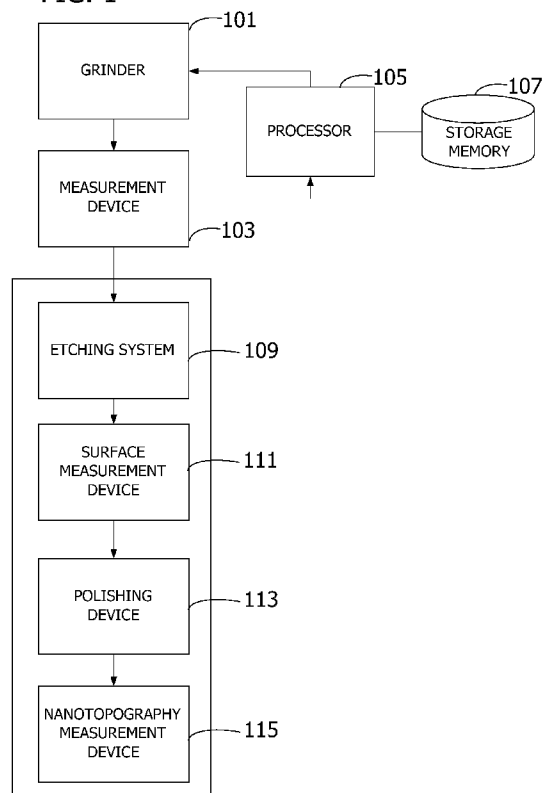
(74) Agents: **SCHUTH, Richard, A.** et al.; Armstrong Teasdale LLP, One Metropolitan Square, 26th Floor, St. Louis, MO 63102 (US).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

[Continued on next page]

(54) Title: NANOTOPOGRAPHY CONTROL AND OPTIMIZATION USING FEEDBACK FROM WARP DATA

FIG. 1



(57) Abstract: Processing a wafer using a double side grinder (101) having a pair of grinding wheels (209). Warp data is obtained by a warp measurement device (103) for measuring warp of a wafer as ground by the double side grinder (101). The warp data is received and a nanotopography of the wafer is predicted based on the received warp data. A grinding parameter is determined based on the predicted nanotopography of the wafer. Operation of the double side grinder (101) is adjusted based on the determined grinding parameter.

WO 2009/088832 A1



(84) **Designated States** (*unless otherwise indicated, for every kind of regional protection available*): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MT, NL,

NO, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— *with international search report*