

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau

(43) International Publication Date
07 June 2018 (07.06.2018)



(10) International Publication Number
WO 2018/102260 A1

(51) International Patent Classification:
H01L 21/66 (2006.01)

(21) International Application Number:
PCT/US2017/063310

(22) International Filing Date:
27 November 2017 (27.11.2017)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
62/427,373 29 November 2016 (29.11.2016) US
15/627,834 20 June 2017 (20.06.2017) US

(71) Applicant: **KLA-TENCOR CORPORATION** [US/US];
Legal Department, One Technology Drive, Milpitas, California 95035 (US).

(72) Inventors: **SAH, Kaushik**; Waterlelieplein 5, B-301, 3010 Kessel Lo (BE). **KRAH, Thomas**; Schmidtstr. 312, 61169 Friedberg (DE). **LI, Shifang**; 3357 Sagewood Court,

Pleasanton, California 94588 (US). **EISENBACH, Heiko**; Gaeuchen 14, 65604 Elz (DE). **STOERRING, Moritz**; Landbouwstraat 88, B-1030 Brussels (BE).

(74) Agent: **MCANDREWS, Kevin** et al.; KLA-Tencor Corp., Legal Department, One Technology Drive, Milpitas, California 95035 (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, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DJ, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, JO, JP, KE, KG, KH, KN, KP, KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH,

(54) Title: BONDED WAFER METROLOGY

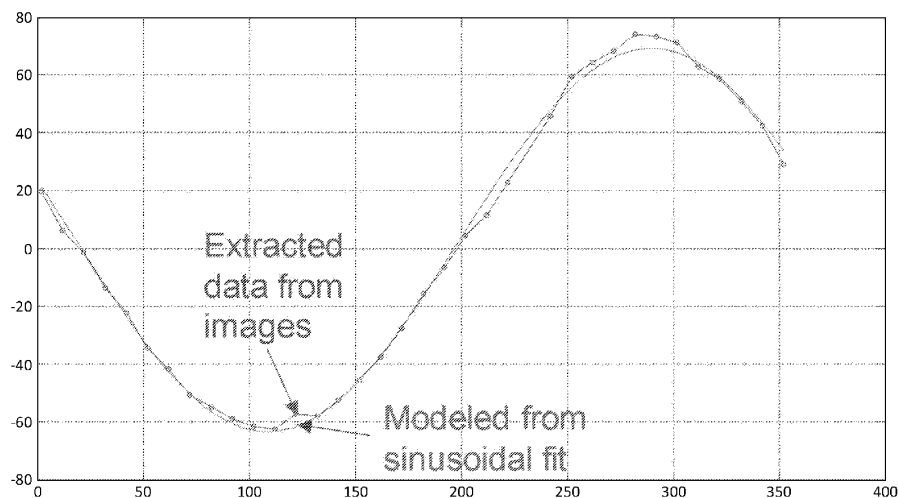


FIG. 4B

(57) Abstract: Wafer edge profile images are analyzed at locations around a bonded wafer, which may have a top wafer and a carrier wafer. An offset curve is generated based on the wafer edge profile images. Displacement of the top wafer to the carrier wafer is determined based on the offset curve. The wafer edge profile images may be generated at multiple locations around the wafer. The wafer edge profile images may be shadowgram images. A system to determine displacement of the top wafer to the carrier wafer can include an imaging system connected with a controller.

[Continued on next page]

WO 2018/102260 A1

GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, ST, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

Published:

— with international search report (Art. 21(3))