

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

(19) World Intellectual Property
Organization
International Bureau

(43) International Publication Date
07 April 2022 (07.04.2022)



(10) International Publication Number
WO 2022/071981 A1

(51) International Patent Classification:
H01L 21/66 (2006.01) *G06T 7/00* (2006.01)

(21) International Application Number:
PCT/US2021/016494

(22) International Filing Date:
04 February 2021 (04.02.2021)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
63/086,019 30 September 2020 (30.09.2020) US
17/148,549 13 January 2021 (13.01.2021) US

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

(72) Inventor: **GRANOT, Asaf**, Oren 2, 2012400 Lotem (IL).

(74) Agent: **MCANDREWS, Kevin et al.**; Kla Corporation, 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, IT, 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, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, WS, ZA, ZM, ZW.

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

(54) Title: SYSTEMS AND METHODS FOR DETERMINING MEASUREMENT LOCATION IN SEMICONDUCTOR WAFER METROLOGY

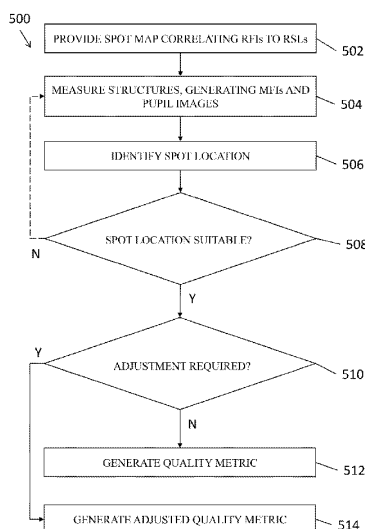


FIG. 5

(57) Abstract: A system and method for generating a quality metric relating to a fully or partially fabricated semiconductor device wafer (FPFSDW), the method including providing a spot map correlating a plurality of reference field images (RFIs) to a corresponding plurality of reference spot locations (RSLs) on at least one reference structure formed on a reference semiconductor device wafer, taking a measurement of at least a portion of at least one FPFSDW structure formed on the FPFSDW, thereby generating a measurement field image (MFI) of at least a portion of the at least one FPFSDW structure and a pupil image of the at least a portion of the at least one FPFSDW structure, identifying, for the measurement, a measurement spot location (MSL) on the at least one FPFSDW structure, using the MFI and the spot map, and generating a quality metric of the FPFSDW, using the pupil image and the MSL.

WO 2022/071981 A1