

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

(19) World Intellectual Property
Organization
International Bureau

(43) International Publication Date
26 January 2023 (26.01.2023)



(10) International Publication Number
WO 2023/001655 A1

(51) International Patent Classification:
H01J 37/28 (2006.01) *H01L 21/66* (2006.01)
G06T 7/00 (2017.01)

(21) International Application Number:
PCT/EP2022/069579

(22) International Filing Date:
13 July 2022 (13.07.2022)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
21186705.6 20 July 2021 (20.07.2021) EP

(71) Applicant: ASML NETHERLANDS B.V. [NL/NL]; P.O.
Box 324, 5500 AH Veldhoven (NL).

(72) Inventors: KUIPER, Vincent, Sylvester; P.O. Box 324,
5500 AH Veldhoven (NL). TRAJANOSKA, Marija; P.O.

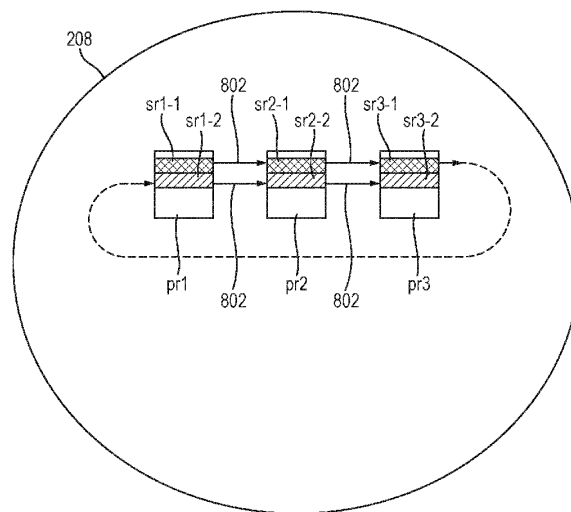
Box 324, 5500 AH Veldhoven (NL). WIELAND, Marco,
Jan-Jaco; P.O. Box 324, 5500 AH Veldhoven (NL).

(74) Agent: ASML NETHERLANDS B.V.; Corporate Intel-
lectual Property, P.O. Box 324, 5500 AH Veldhoven (NL).

(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, CV, CZ, DE, DJ, DK, DM,
DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT,
HN, HR, HU, ID, IL, IN, IQ, IR, IS, IT, JM, 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.

(54) Title: DATA PROCESSING DEVICE AND METHOD, CHARGED PARTICLE ASSESSMENT SYSTEM AND METHOD

Fig. 15



(57) Abstract: A data processing device for detecting defects in sample image data generated by a charged particle assessment system, the device comprising: a first processing module configured to receive a sample image datastream from the charged particle assessment system, the sample image datastream comprising an ordered series of data points representing an image of the sample, and to apply a first defect detection test to select a subset of the sample image datastream as first selected data, wherein the first defect detection test is a localised test which is performed in parallel with receipt of the sample image datastream; and a second processing module configured to receive the first selected data and to apply a second defect detection test to select a subset of the first selected data as second selected data.

[Continued on next page]

WO 2023/001655 A1

(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))*
- *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))*