



(51) International Patent Classification:
H01L 21/66 (2006.01) *G01N 29/12* (2006.01)

(21) International Application Number:
PCT/IB2010/051855

(22) International Filing Date:
28 April 2010 (28.04.2010)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
12/435,934 5 May 2009 (05.05.2009) US

(71) Applicant (for all designated States except US): **LAM RESEARCH CORPORATION** [US/US]; 4650 Cushing Parkway, Fremont, California 94538 (US).

(71) Applicant (for BZ only): **LAM RESEARCH AG** [AT/AT]; SEZ-Strasse 1, A-9500 Villach (AT).

(72) Inventor; and

(75) Inventor/Applicant (for US only): **VALCORE, John** [US/US]; 294 N. Cragmont Ave., San Jose, CA 95127 (US).

(74) Agent: **KONTRUS, Gerhard**; SEZ-Strasse 1, A-9500 Villach (AT).

(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, CL, 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, PE, PG, PH, PL, PT, RO, RS, RU, 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, GM, KE, LR, 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, MK, MT, NL, NO, PL, PT, RO, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

[Continued on next page]

(54) Title: NON-DESTRUCTIVE SIGNAL PROPAGATION SYSTEM AND METHOD TO DETERMINE SUBSTRATE INTEGRITY

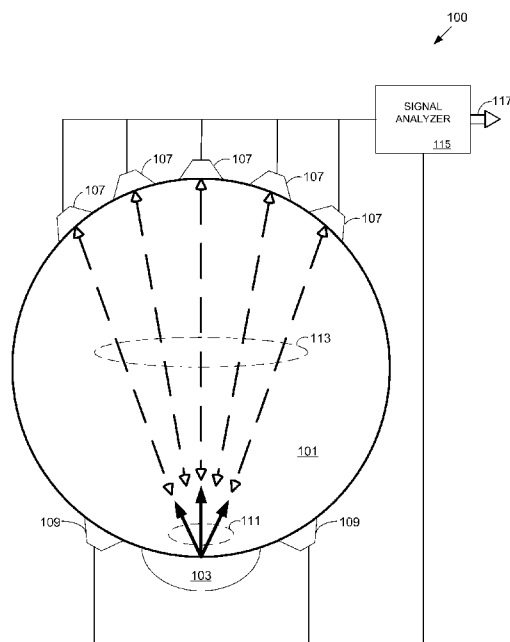


FIG. 1

(57) Abstract: In various exemplary embodiments described herein, a system and associated method relate to non-destructive signal propagation to detect one or more defects in a substrate. The system can be built into a semiconductor process tool such as a substrate handling mechanism. The system comprises a transducer configured to convert one or more frequencies from an electrical signal into at least one mechanical pulse. The mechanical pulse is coupled to the substrate through the substrate handling mechanism. A plurality of sensors is positioned distal to the transducer and configured to be coupled, acoustically or mechanically, to the substrate. The plurality of distal sensors is further configured to detect both the mechanical pulse and any distortions to the pulse. A signal analyzer is coupled to the plurality of distal sensors to compare the detected pulse and any distortions to the pulse with a baseline response.



-
- *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))* **Published:**
— *with international search report (Art. 21(3))*
- *as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))* **(88) Date of publication of the international search report:**
3 March 2011