PCT WORLD INTELLECTUAL PROPERTY ORGANIZATION
International Bureau

INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification 6 : G01N 21/88	A1	(11) International Publication Number: WO 99/67626
		(43) International Publication Date: 29 December 1999 (29.12.99)

(21) International Application Number: PCT/US99/13082

(22) International Filing Date: 9 June 1999 (09.06.99)

(30) Priority Data:
09/104,226 25 June 1998 (25.06.98) US

(71) Applicant: APPLIED MATERIALS, INC. [US/US]; 3050 Bowers Avenue, Santa Clara, CA 95054 (US).

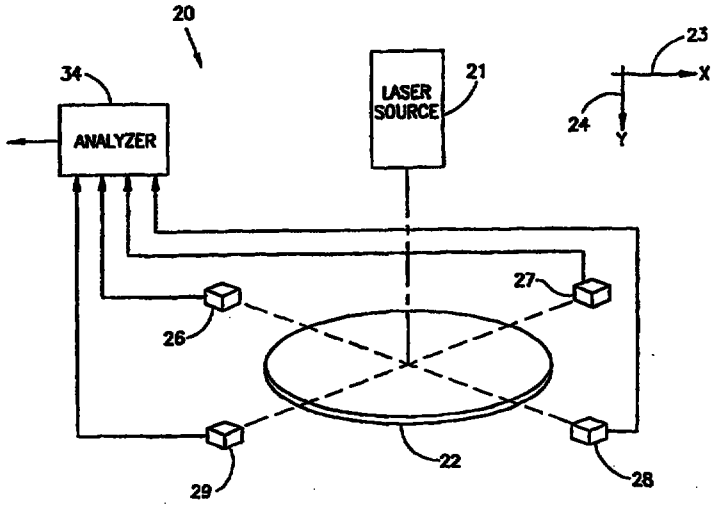
(72) Inventors: RAVID, Erez; Hechalutz 19A, 96222 Jerusalem (IL). HOLCMAN, Ido; Derech Yavne 63/6, 76343 Rechovot (IL). MIKOLINSKY, Vladimir; Hasam 11 A, 76216 Rechovot (IL).

(74) Agents: BERNADICOU, Michael, A. et al.; Blakely, Sokoloff, Taylor & Zafman LLP, 7th floor, 12400 Wilshire Boulevard, Los Angeles, CA 90025 (US).

(81) Designated States: JP, KR, SG, European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE).

Published
With international search report.
Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.

(54) Title: WAFER DEFECT CLASSIFICATION



(57) Abstract

A system and a method for on–the–fly automatic defect classification (ADC) during semiconductor wafer processing are described. In one embodiment of the system, a light source, e.g. a laser, (21) illuminates a small region of a wafer (22) undergoing inspection. Four evenly distributed dark field detectors, e.g. photomultipliers or CCDs, (26–29) are mounted on the edge of the wafer so that their respective fields of view overlap to form a detection zone. Light scattered in the direction of one or more of the detectors (26–29) is collected and converted into an electrical signal, which is transmitted to an analyzer module (34). The analyzer module (34) serves to detect defects in the wafer and to classify them into distinct defect types. Optionally, the system also includes a bright field detector.