



- (51) **International Patent Classification:**  
*H01L 21/66* (2006.01)
- (21) **International Application Number:**  
PCT/US2012/066887
- (22) **International Filing Date:**  
28 November 2012 (28.11.2012)
- (25) **Filing Language:** English
- (26) **Publication Language:** English
- (30) **Priority Data:**  
61/564,733 29 November 2011 (29.11.2011) US  
13/687,244 28 November 2012 (28.11.2012) US
- (71) **Applicant:** KLA-TENCOR CORPORATION [US/US];  
Legal Department, One Technology Drive, Milpitas, California 95035 (US).
- (72) **Inventors:** CAMPOCHIARO, Cecilia; 1002 The Dalles,  
Sunnyvale, California 94087 (US). XIAO, Hong; 4527  
Gatetree Circle, Pleasanton, California 94566 (US). VAN  
RIET, Michael; 890 Ithaca Avenue, Sunnyvale, California  
94087 (US). CLARKE, Benjamin; One Technology  
Drive, Milpitas, California 95035 (US). SINHA, Harsh;  
One Technology Drive, Milpitas, California 95035 (US).
- (74) **Agent:** MCANDREWS, Kevin; KLA-Tencor Corpora-  
tion, Legal Department, One Technology Drive, Milpitas,  
CA 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, 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, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, 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, RW, SD, SL, 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, 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))

(54) **Title:** SYSTEMS AND METHODS FOR PREPARATION OF SAMPLES FOR SUB-SURFACE DEFECT REVIEW

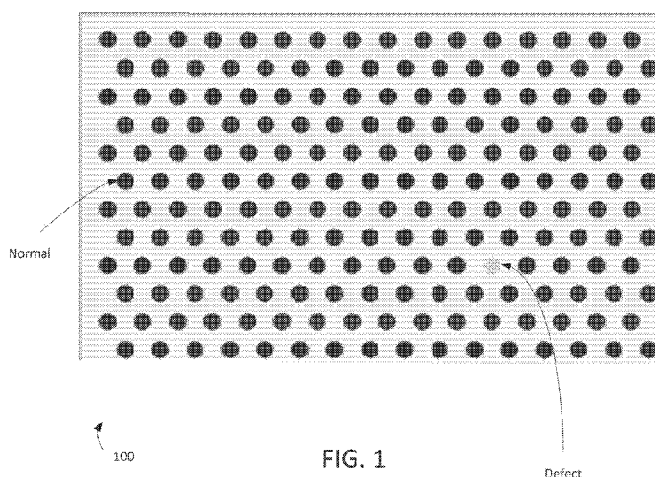


FIG. 1

(57) **Abstract:** One embodiment relates to a method of preparation of a sample of a substrate for sub-surface review using a scanning electron microscope apparatus. A defect at a location indicated in a first results file is re-detected, and the location of the defect is marked with at least one discrete marking point having predetermined positioning relative to the location of the defect. The location of the defect may be determined relative to the design for the device, and a cut location and a cut angle may be determined in at least a partly-automated manner using that information. Another embodiment relates to a system for preparing a sample for sub-surface review. Another embodiment relates to a method for marking a defect for review on a target substrate. Other embodiments, aspects and feature are also disclosed.

