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

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
24 February 2005 (24.02.2005)

PCT

(10) International Publication Number
WO 2005/017981 A3

(51) International Patent Classification[7]: H01L 21/66

(21) International Application Number:
PCT/US2004/017619

(22) International Filing Date: 4 June 2004 (04.06.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
10/634,013 4 August 2003 (04.08.2003) US

(71) Applicant *(for all designated States except US)*: **ADVANCED MICRO DEVICES, INC.** [US/US]; One AMD Place, Mail Stop 68, P.O. Box 3453, Sunnyvale, CA 94088-3453 (US).

(72) Inventor; and

(75) Inventor/Applicant *(for US only)*: **PURDY, Matthew, A.** [US/US]; 4716 Walsall Loop, Austin, TX 78749 (US).

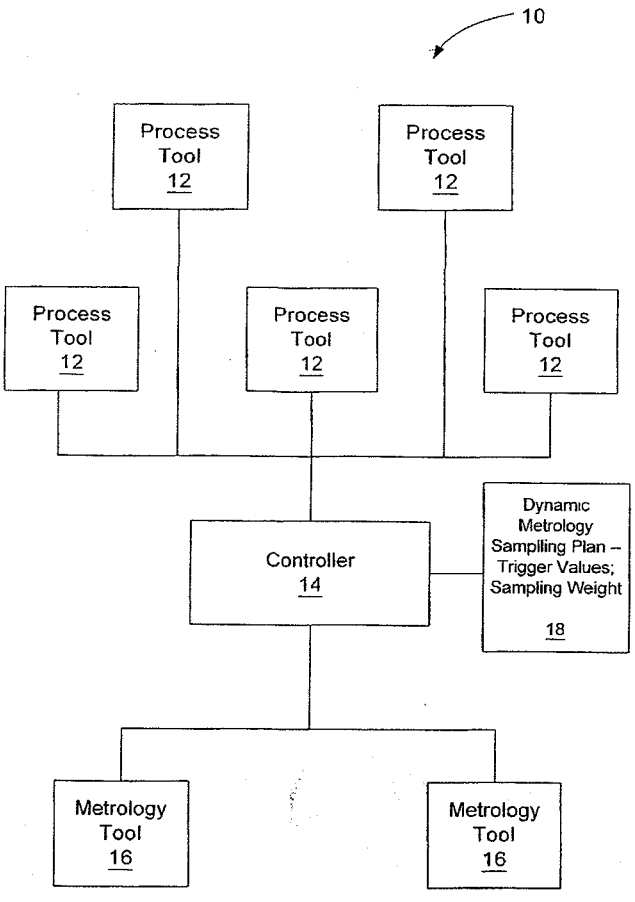
(74) Agent: **DRAKE, Paul, S.**; Advanced Micro Devices, Inc., 5204 East Ben White Boulevard, Mail Stop 562, Austin, TX 78741 (US).

(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

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

[Continued on next page]

(54) Title: DYNAMIC METROLOGY SAMPLING METHODS



(57) Abstract: The present invention is generally directed to various methods and systems for adaptive metrology sampling plans that may be employed to monitor various manufacturing processes. In one example, the method comprises creating a plurality of metrology sampling rules, assigning each of the metrology sampling rules a sampling weight value, identifying at least one workpiece that satisfies at least one of the metrology sampling rules, assigning the sampling weight value for each of the satisfied metrology sampling rules with the identified workpieces that satisfy the rules, and indicating a metrology operation should be performed when a cumulative total of the sampling weight values is at least equal to a pre-established trigger value. In further embodiments, the method involves indicating a metrology operation should be performed when a cumulative total of the sampling weight values for one of the metrology sampling rules is at least equal to a pre-established trigger value or indicating a metrology operation should be performed when a cumulative total of the sampling weight values for one of the workpieces is at least equal to a pre-established trigger value.

WO 2005/017981 A3

FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— *with international search report*

— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*

(88) Date of publication of the international search report:
31 March 2005

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.