



(43) International Publication Date
6 December 2012 (06.12.2012)

- (51) International Patent Classification:
H01L 21/205 (2006.01) H01L 21/683 (2006.01)
- (21) International Application Number:
PCT/US2012/039947
- (22) International Filing Date:
30 May 2012 (30.05.2012)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:
61/491,486 31 May 2011 (31.05.2011) US
- (71) Applicant (for all designated States except US): **VEECO INSTRUMENTS INC.** [US/US]; Terminal Drive, Plainview, NY 11803 (US).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): **BOGUSLAVSKIY, Vadim** [US/US]; 232 Mount Lucas Road, Princeton, NJ 08540 (US). **MANGUM, Joshua** [US/US]; 5401 Oak Grove Court, Sarasota, FL 34233 (US). **KING, Matthew** [US/US]; 7 Century Ct., Montville, NJ 07045 (US). **MAR-**

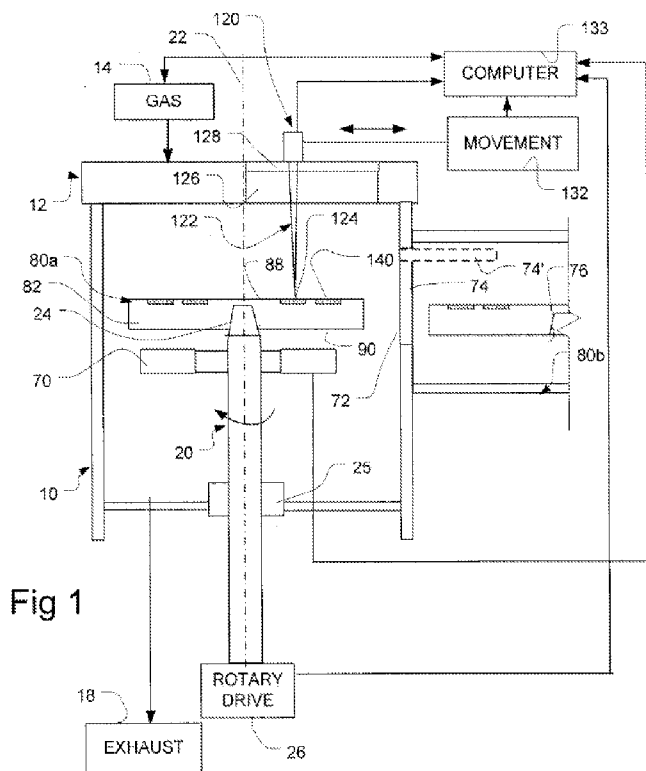
CELO, Earl [US/US]; 547 Elsie Avenue, South Plainfield, NJ 07080 (US). **ARMOUR, Eric, A.** [US/US]; 14 Laning Avenue, Pennington, NJ 08534 (US). **GURARY, Alexander, I.** [US/US]; 1068 Tullo Farm Road, Bridgewater, NJ 08807 (US). **QUINN, William, E.** [US/US]; 14 Militia Road, Whitehouse Station, NJ 08889 (US). **TAS, Guray** [US/US]; 91 Crenshaw Drive, Flanders, NJ 07836 (US).

(74) Agents: **REILLY, Gregory, M.** et al.; Lerner, David, Lit-tenberg, Krumholz &, Mentlik, LLP, 600 South Avenue West, Westfield, NJ 07090 (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, 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, 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.

[Continued on next page]

(54) Title: HEATED WAFER CARRIER PROFILING



(57) Abstract: An apparatus provides a carrier (80) rotatable about an axis of rotation (22) where the carrier has a top surface (88) adapted to hold at least one semiconductor wafer (140) and a surface characterization tool (120) which is operative to move over a plurality of positions relative to the top surface of the carrier and/or the wafer transverse to the axis of rotation A method using the apparatus is also included.





(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).

Declarations under Rule 4.17:

- as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))

- as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))

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))

(88) Date of publication of the international search report:

28 February 2013

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2012/039947**A. CLASSIFICATION OF SUBJECT MATTER****H01L 21/205(2006.01)i, H01L 21/683(2006.01)i**

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

H01L 21/205; H01L 21/477; G06F 15/00; G01B 11/24; H01L 21/66; G01K 1/00

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Korean utility models and applications for utility models

Japanese utility models and applications for utility models

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

eKOMPASS(KIPO internal) & Keywords: contact, surface, carrier, rotate, axis, wafer

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2005-0286058 A1 (MIKHAIL BELOUSOV et al.) 29 December 2005 See paragraphs [0014], [0022] claims 5,18 fig. 1	1-49
A	US 2002-0068371 A1 (MO YUN) 06 June 2002 See paragraphs [0025], [0044]-[0056] claim 9 fig. 5	1-49
A	US 2010-0292950 A1 (IUCHI TOHRU et al.) 18 November 2010 See paragraph [0072] fig. 5	1-49

 Further documents are listed in the continuation of Box C. See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search

26 DECEMBER 2012 (26.12.2012)

Date of mailing of the international search report

26 DECEMBER 2012 (26.12.2012)

Name and mailing address of the ISA/KR

Korean Intellectual Property Office
189 Cheongsa-ro, Seo-gu, Daejeon Metropolitan
City, 302-701, Republic of Korea

Facsimile No. 82-42-472-7140

Authorized officer

Park, Sungho

Telephone No. 82-42-481-5724



INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/US2012/039947

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2005-0286058 A1	29.12.2005	US 7570368 B2	04.08.2009
US 2002-0068371 A1	06.06.2002	JP 04-499274 B2	23.04.2010
		JP 2002-170775 A	14.06.2002
		JP 4499274 B2	07.07.2010
		US 2003-0206574 A1	06.11.2003
		US 6579731 B2	17.06.2003
		US 6798036 B2	28.09.2004
US 2010-0292950 A1	18.11.2010	JP W020-090817 48A1	02.07.2009
		WO 2009-081748 A1	02.07.2009