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

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
4 March 2010 (04.03.2010)

PCT

(10) International Publication Number
WO 2010/024943 A3

(51) International Patent Classification:
*H01L 21/205* (2006.01) *H01L 21/683* (2006.01)
*H01L 21/673* (2006.01) *H01L 21/687* (2006.01)

(21) International Application Number:
PCT/US2009/004931

(22) International Filing Date:
28 August 2009 (28.08.2009)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
61/190,494 29 August 2008 (29.08.2008) 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)*: **VOLF, Boris** [RU/US]; 306 Zion Road, Hillsborough, NJ 08844 (US). **SODERMAN, Breid** [US/US]; 4580 Louise Saint Claire Drive, Doylestown, PA 18902 (US). **ARMOUR, Eric, A.** [US/US]; 14 Laning Avenue, Pennington, NJ 08534 (US).

(74) Agents: **MILLET, Marcus, J.** et al.; Lerner, David, Littenberg, 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, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, 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, 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**:

— *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**:

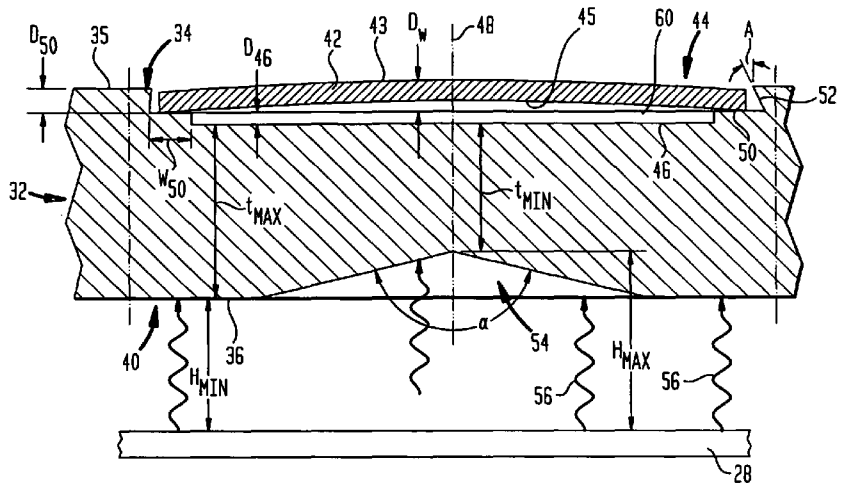
— *with international search report (Art. 21(3))*

— *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))*

*[Continued on next page]*

(54) Title: WAFER CARRIER WITH VARYING THERMAL RESISTANCE

FIG. 3




(57) Abstract: In chemical vapor deposition apparatus, a wafer carrier (32) has a top surface (34) holding the wafers and a bottom surface (36) heated by radiant heat transfer from a heating element (28). The bottom surface (36) of the wafer carrier is non-planar due to features such as depressions (54) so that the wafer carrier has different thickness at different locations. The thicker portions of the wafer carrier have higher thermal resistance. Differences in thermal resistance at different locations counteract undesired non-uniformities in heat transfer to the wafer. The wafer carrier may have pockets with projections (553, 853) for engaging spaced-apart locations on the edges of the wafer.

WO 2010/024943 A3

**(88) Date of publication of the international search report**:
17 June 2010