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

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
12 April 2012 (12.04.2012)

PCT

(10) International Publication Number
WO 2012/048044 A2

(51) International Patent Classification:
H01L 21/3105 (2006.01) *H01L 21/68* (2006.01)

(21) International Application Number:
PCT/US2011/054984

(22) International Filing Date:
5 October 2011 (05.10.2011)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
61/389,957 5 October 2010 (05.10.2010) US
13/247,687 28 September 2011 (28.09.2011) US

(71) Applicant *(for all designated States except US)*: **APPLIED MATERIALS, INC.** [US/US]; 3050 Bowers Avenue, Santa Clara, CA 95054 (US).

(72) Inventors; and

(75) Inventors/Applicants *(for US only)*: **LUBOMIRSKY, Dmitry** [IL/US]; 10540 Felton Way, Cupertino, CA 95014 (US). **PINSON II, Jay, D.** [US/US]; 6879 Queenswood Way, San Jose, CA 95120 (US). **FLOYD, Kirby, H.** [US/US]; 327 Los Pinos Way, San Jose, CA 95119 (US). **KHAN, Adib** [US/US]; 4473 Lafayette Street, Santa Clara, CA 95054 (US). **VENKATARAMAN, Shankar** [US/US]; 5974 Thorntree Drive, San Jose, CA 95120 (US).

(74) Agents: **BERNARD, Eugene, J.** et al.; Kilpatrick Townsend & Stockton LLP, Two Embarcadero Center, 8th Floor, San Francisco, CA 94111 (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.

(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, MD, 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,

[Continued on next page]

(54) Title: MODULE FOR OZONE CURE AND POST-CURE MOISTURE TREATMENT

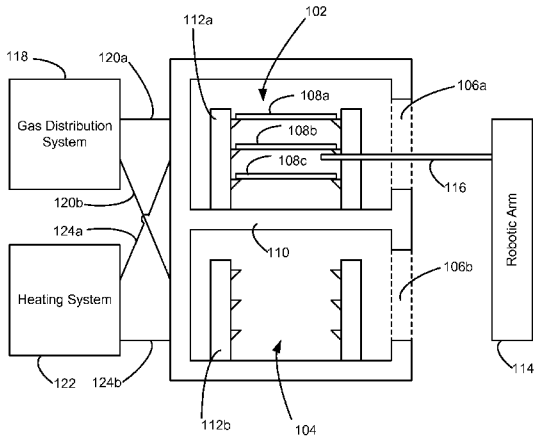


FIG. 1

(57) Abstract: A substrate processing system that has a plurality of deposition chambers, and a first robotic arm operable to move a substrate between one of the deposition chambers and a load-lock substrate holding area. The system may also have a second robotic arm operable to move the substrate between the load-lock substrate holding area and a curing chamber of a substrate curing and treatment module. The substrate curing and treatment module is attached to the load- lock substrate holding area, and may include: The curing chamber for curing a dielectric layer in an atmosphere comprising ozone, and a treatment chamber for treating the cured dielectric layer in an atmosphere comprising water vapor. The curing chamber may be vertically positioned with respect to the treatment chamber. The module may also include a heating system operatively coupled to the curing chamber and the treatment chamber, where the heating system is operative to adjust a first temperature of the curing chamber to from about 150°C to about 200°C, and to adjust a second temperature of the treatment chamber to from about 80°C to about 100°C. The module may still further include an access door on both the curing chamber and the treatment chamber. Each of the access doors are operable to be moved to an open position to receive a substrate, and operable to be moved to a closed sealed position during while the substrate is being cured or treated.

WO 2012/048044 A2

SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— *without international search report and to be republished upon receipt of that report (Rule 48.2(g))*