

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
19 June 2008 (19.06.2008)

PCT

(10) International Publication Number
WO 2008/073845 A1

(51) International Patent Classification:
C23C 14/32 (2006.01) *C23C 14/00* (2006.01)

(21) International Application Number:
PCT/US2007/086848

(22) International Filing Date:
7 December 2007 (07.12.2007)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
11/608,357 8 December 2006 (08.12.2006) 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): **LI, Shijian** [US/US]; 1202 Donington Drive, San Jose, CA 95129 (US). **RAMASWAMY, Kartik** [US/US]; 1646 Tawnygate Way, San Jose, CA 95124 (US). **GALLO, Biagio** [IT/US]; 530 Webster #11, Palo Alto, CA 94301 (US). **LEE, Dong Hyung** [KR/KR]; Tae-young Dessian APT 102-1901, Pungdeokcheon 2-dong, Suji-gu, Yongin-si, Gyeonggi-do 449-550 (KR). **FOAD, Majeed A.** [GB/US]; 640 Sheraton Drive, Sunnyvale, CA 94087 (US).

(74) Agents: **PATTERSON, B. Todd** et al.; Patterson & Sheridan, L.L.p., 3040 Post Oak Blvd., Suite 1500, Houston, Texas 77056-6582 (US).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, 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, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

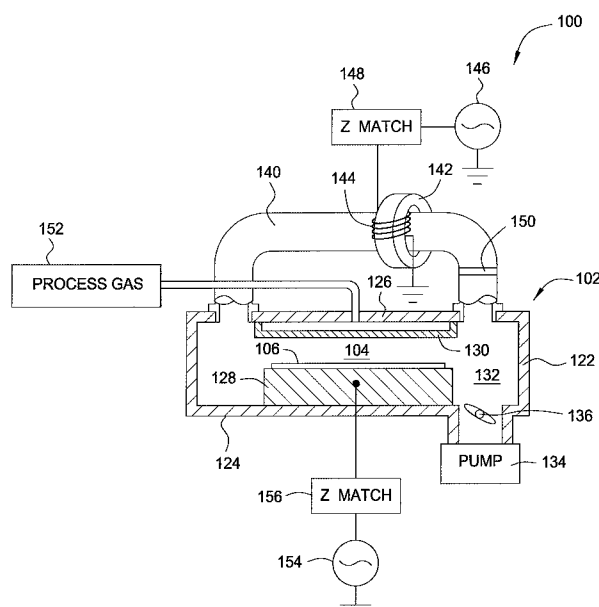
(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, MT, 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

[Continued on next page]

(54) Title: PLASMA IMMERSSED ION IMPLANTATION PROCESS



(57) Abstract: Methods for implanting ions into a substrate by a plasma immersion ion implantation process are provided. In one embodiment, the method for implanting ions into a substrate by a plasma immersion ion implantation process includes providing a substrate into a processing chamber, supplying a gas mixture including a reacting gas and a reducing gas into the chamber, and implanting ions from the gas mixture into the substrate. In another embodiment, the method includes providing a substrate into a processing chamber, supplying a gas mixture including reacting gas and a hydrogen containing reducing gas into the chamber, and implanting ions from the gas mixture into the substrate.

WO 2008/073845 A1



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