



(51) International Patent Classification:

H01J 37/08 (2006.01) **C23C 14/48** (2006.01)
H01J 37/317 (2006.01)

(21) International Application Number:

PCT/US2011/051172

(22) International Filing Date:

12 September 2011 (12.09.2011)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

61/383,213 15 September 2010 (15.09.2010) US

(71) **Applicant** (for all designated States except US): **PRAX-AIR TECHNOLOGY, INC.** [US/US]; 39 Old Ridgebury Road, Danbury, CT 06810 (US).

(72) Inventors; and

(75) **Inventors/Applicants** (for US only): **SINHA, Ashwini** [IN/US]; 105 Autumn Creek Lane, Apt. H., East Amherst, NY 14051 (US). **BROWN, Lloyd, A.** [JM/US]; 63 Echowood Drive, East Amherst, NY 14051 (US).

(74) **Agents:** **DALAL, Nilay S.** et al.; Praxair, Inc., 39 Old Ridgebury Road, Danbury, CT 06810 (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, 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, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

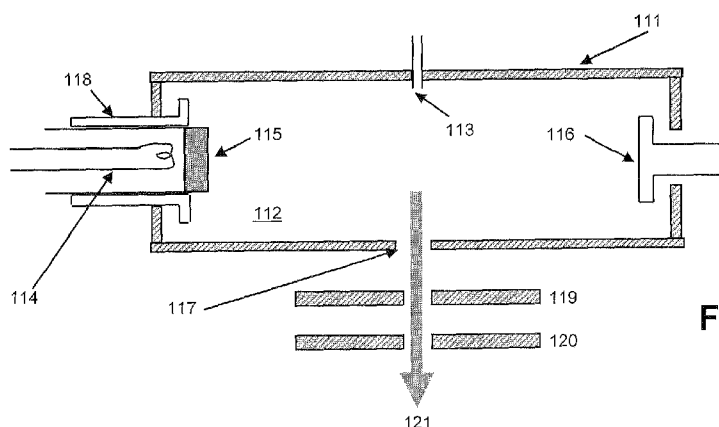
Declarations under Rule 4.17:

- 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:

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

(54) **Title:** METHOD FOR EXTENDING LIFETIME OF AN ION SOURCE

**Fig. 1**

(57) **Abstract:** This invention relates in part to a method for preventing or reducing the formation and/or accumulation of deposits in an ion source component of an ion implanter used in semiconductor and microelectronic manufacturing. The ion source component includes an ionization chamber and one or more components contained within the ionization chamber. The method involves introducing into the ionization chamber a dopant gas, wherein the dopant gas has a composition sufficient to prevent or reduce the formation of fluorine ions/radicals during ionization. The dopant gas is then ionized under conditions sufficient to prevent or reduce the formation and/or accumulation of deposits on the interior of the ionization chamber and/or on the one or more components contained within the ionization chamber. The deposits adversely impact the normal operation of the ion implanter causing frequent down time and reducing tool utilization.

