



(51) International Patent Classification:

H01L 21/67 (2006.01) C23C 16/46 (2006.01)
C23C 16/44 (2006.01) G01M 3/34 (2006.01)

(21) International Application Number:

PCT/US2021/052344

(22) International Filing Date:

28 September 2021 (28.09.2021)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

17/079,040 23 October 2020 (23.10.2020) US

(71) Applicant: **APPLIED MATERIALS, INC.** [US/US];
3050 Bowers Avenue, Santa Clara, California 95054 (US).

(72) Inventors: **HILKENE, Martin A.**; c/o Applied Materials,
Inc., Law Dept., M/S 1269, 3050 Bowers Avenue, Santa
Clara, California 95054 (US). **SRIVASTAVA, Surendra
Singh**; c/o Applied Materials, Inc., Law Dept., M/S 1269,
3050 Bowers Avenue, Santa Clara, California 95054 (US).

(74) Agent: **PATTERSON, B. Todd** et al.; PATTERSON +
SHERIDAN LLP, 24 Greenway Plaza, Suite 1600, Hous-
ton, Texas 77046 (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, BN, BR, BW, BY, BZ,
CA, CH, CL, CN, CO, CR, CU, CZ, DE, DJ, DK, DM, DO,
DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN,
HR, HU, ID, IL, IN, IR, IS, IT, JO, JP, KE, KG, KH, KN,
KP, KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD,
ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO,
NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW,
SA, SC, SD, SE, SG, SK, SL, ST, SV, SY, TH, TJ, TM, TN,
TR, TT, TZ, UA, UG, US, UZ, VC, VN, WS, 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, ST, 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,
KM, ML, MR, NE, SN, TD, TG).

Published:

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

(54) Title: RAPID CHAMBER VACUUM LEAK CHECK HARDWARE AND MAINTENANCE ROUTINE

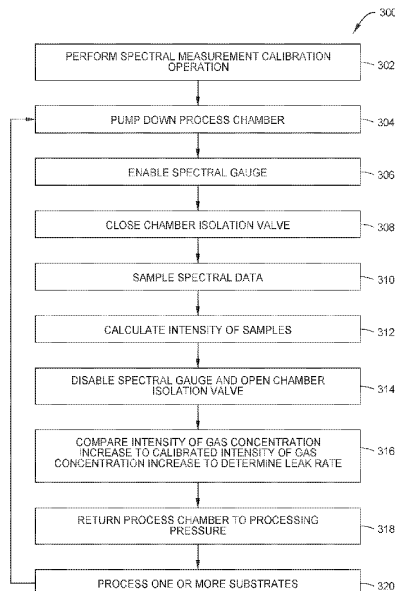


FIG. 3

(57) Abstract: Methods and apparatus for detecting a vacuum leak within a processing chamber are described herein. More specifically, the methods and apparatus relate to the utilization of a spectral measurement device, such as a spectral gauge, to determine the leak rate within a process chamber while the process chamber is held at a leak test pressure. The spectral measurement device determines the rate of increase of one or more gases within the processing chamber and can be used to determine if the processing chamber passes or fails the leak test.