

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

(19) World Intellectual Property
Organization
International Bureau

(43) International Publication Date
07 May 2020 (07.05.2020)



(10) International Publication Number
WO 2020/092198 A1

(51) International Patent Classification:

H01L 21/67 (2006.01) H01L 21/673 (2006.01)
H01L 21/324 (2006.01)

(21) International Application Number:

PCT/US2019/058275

(22) International Filing Date:

28 October 2019 (28.10.2019)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

62/751,680 28 October 2018 (28.10.2018) US

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

(72) Inventors: **HONAN, Michael**; 8 Larchmont Street, Danvers, Massachusetts 01923 (US). **BLAHNIK, David**; 2802 Quannah Drive, Round Rock, Texas 78681 (US). **VOPAT, Robert Brent**; 8800 Credit Ridge Cir., Austin, Texas 78750 (US). **BLAHNIK, Jeffrey**; 8132 Beauregard Drive, Vo-

lente, Texas 78641 (US). **CARLSON, Charles**; 3911 Arrow Wood Road, Cedar Park, Texas 78750 (US).

(74) Agent: **BLANKMAN, Jeffrey I.**; SERVILLA WHITNEY LLC, 33 Wood Avenue South, Suite 830, Iselin, New Jersey 08830 (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, 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, 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, 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,

(54) Title: PROCESSING CHAMBER WITH ANNEALING MINI-ENVIRONMENT

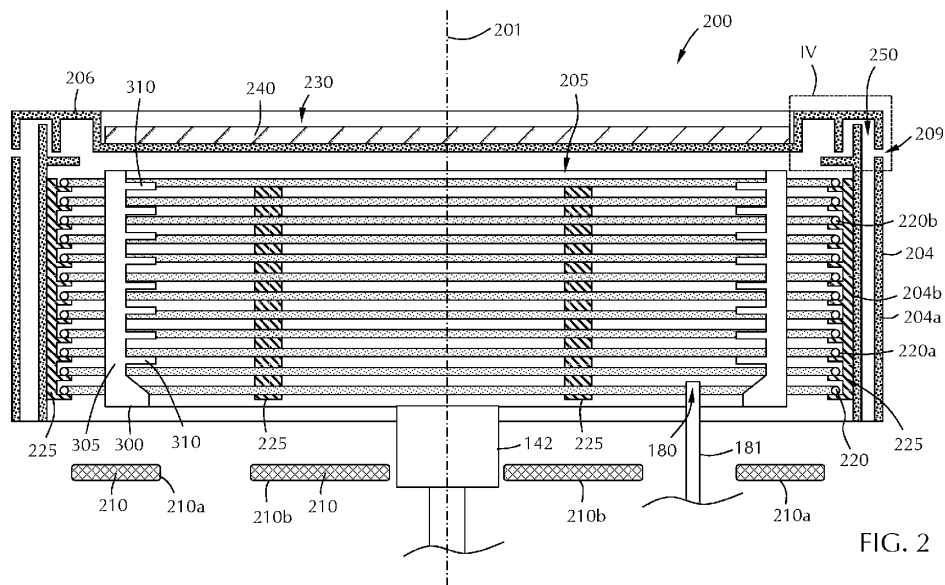


FIG. 2

(57) Abstract: Apparatus and methods to process one or more wafers are described. The apparatus comprises a chamber defining an upper interior region and a lower interior region. A heater assembly is on the bottom of the chamber body in the lower interior region and defines a process region. A wafer cassette assembly is inside the heater assembly and a motor is configured to move the wafer cassette assembly from the lower process region inside the heater assembly to the upper interior region.

[Continued on next page]

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))