



- (51) **International Patent Classification:**
H01L 21/683 (2006.01) *H01L 21/205* (2006.01)
- (21) **International Application Number:**
PCT/US2015/035243
- (22) **International Filing Date:**
11 June 2015 (11.06.2015)
- (25) **Filing Language:** English
- (26) **Publication Language:** English
- (30) **Priority Data:**
62/023,024 10 July 2014 (10.07.2014) US
- (71) **Applicant:** APPLIED MATERIALS, INC. [US/US];
3050 Bowers Avenue, Santa Clara, California 95054 (US).
- (72) **Inventors:** HUANG, Yi-Chiau; 40972 Cruz Court, Fremont, California 94539 (US). ZHU, Zuoming; 237 East Hemlock Avenue, Sunnyvale, California 94085 (US).
- (74) **Agents:** PATTERSON, B. Todd et al.; Patterson & Sheridan, L.L.P., 24 Greenway Plaza, Suite 1600, Houston, 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, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, JP, KE, KG, KN, KP, KR, 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, 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))

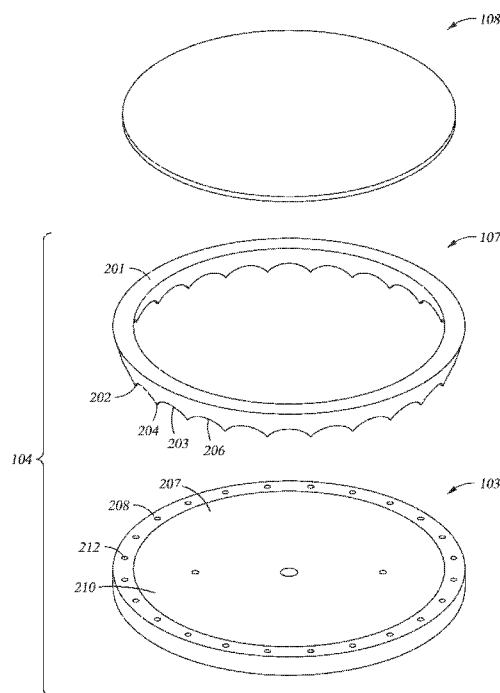
(54) **Title:** DESIGN OF SUSCEPTOR IN CHEMICAL VAPOR DEPOSITION REACTOR

Fig. 2A

(57) **Abstract:** Embodiments described herein generally relate to an apparatus for depositing materials on a substrate. The apparatus includes a substrate support assembly. The substrate support assembly includes a susceptor and a substrate support ring disposed on the susceptor. The substrate support ring has a first surface for receiving the substrate and a second surface opposite the first surface. The second surface includes at least three protrusions and each protrusion has a tip that is in contact with the susceptor. The substrate support ring is comprised of a material having poor thermal conductivity, and the contact area between the substrate support ring and the susceptor is minimized, resulting in minimum unwanted heat conduction from the susceptor to the edge of the substrate.