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

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
15 July 2004 (15.07.2004)

PCT

(10) International Publication Number
WO 2004/059716 A1

(51) International Patent Classification[7]: H01L 21/3065

(21) International Application Number:
PCT/US2003/039994

(22) International Filing Date:
17 December 2003 (17.12.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
10/326,918 20 December 2002 (20.12.2002) US

(71) Applicant *(for all designated States except US)*: **LAM RESEARCH CORPORATION** [US/US]; P0862PCT, 4650 Cushing Parkway, Fremont, CA 94538 (US).

(72) Inventors; and

(75) Inventors/Applicants *(for US only)*: **NI, Tuqiang** [US/US]; 653 Crystal Court, Pleasanton, CA 94566 (US). **COLLISON, Wenli** [US/US]; 666 Bella Vista Court, Fremont, CA 94539 (US).

(74) Agent: **NGUYEN, Joseph, A.**; IPSG, PC, 10121 Miller Avenue #201, Cupertino, CA 95014 (US).

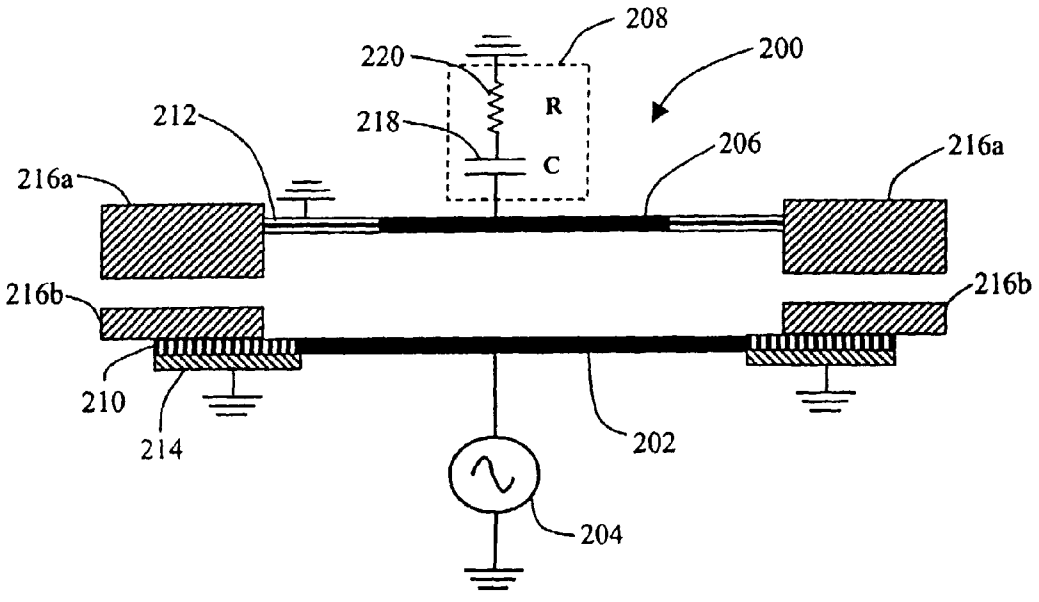
(81) Designated States *(national)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States *(regional)*: ARIPO patent (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (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: A SYSTEM AND METHOD FOR CONTROLLING PLASMA WITH AN ADJUSTABLE COUPLING TO GROUND CIRCUIT



(57) Abstract: A system and method for controlling plasma. The system includes a semiconductor chamber comprising a powered electrode, another electrode, and an adjustable coupling to ground circuit. The powered electrode is configured to receive a wafer or substrate. There is at least one grounded electrode configured to generate an electrical connection with the powered electrode. At least one of the grounded electrodes is electrically coupled to the adjustable coupling to ground circuit. The adjustable coupling to ground circuit is configured to modify the impedance of the grounded electrode. The ion energy of the plasma is controlled by the adjustable coupling to ground circuit.

WO 2004/059716 A1

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

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.