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

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
11 May 2006 (11.05.2006)

PCT

(10) International Publication Number
WO 2006/049954 A2

(51) International Patent Classification:
B44C 1/22 (2006.01) *B08B 6/00* (2006.01)
H01L 21/311 (2006.01)

(21) International Application Number:
PCT/US2005/038373

(22) International Filing Date: 26 October 2005 (26.10.2005)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
10/975,946 29 October 2004 (29.10.2004) US

(71) Applicant *(for all designated States except US)*: **LAM RESEARCH CORPORATION** [US/US]; 4650 Cushing Parkway, Fremont, CA 94538-6470 (US).

(71) Applicant and
(72) Inventor: **CHEN, Wan-lin** [—/US]; 705 San Conrado Terrace, #1, Sunnyvale, CA 94085 (US).

(72) Inventors; and
(75) Inventors/Applicants *(for US only)*: **TAKESHITA, Kenji** [JP/US]; 4237 Garland Drive, Fremont, CA 94536 (US). **ASO, Tsuyoshi** [JP/JP]; Walts-no-mori D604, 3-1-1, Wakabadai, Inagi-shi, Tokyo, 206-0824 (JP). **KAWAGUCHI, Seiji** [JP/US]; 1429 Cedarmeadow Court, San Jose, CA 95131 (US). **MCCLARD, Thomas** [US/US]; 3417 Fitzsimmons Common, Fremont, CA 94538 (US). **MAGNI, Enrico** [IT/US]; 3144 Cranwood Court, Pleasanton, CA 94588 (US). **KELLY, Michael** [US/US]; 4477 Fairlands Drive, Pleasanton, CA 94588 (US). **LUPAN, Michelle** [US/US]; 834 Buckingham Place, Danville, CA 94506 (US). **HEFTY, Robert** [US/US]; 338 Mariposa #1, Mountain View, CA 94041 (US).

(74) Agent: **SKIFF, Peter, K.**; Buchanan Ingersoll PC, P.O. Box 1404, Alexandria, VA 22313-1404 (US).

(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: 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, KM, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

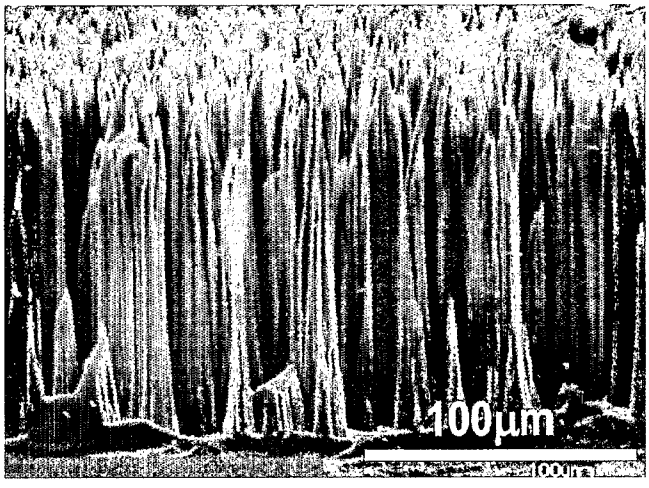
(84) Designated States *(unless otherwise indicated, for every kind of regional protection available)*: ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, 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*

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.

(54) Title: METHODS FOR PROTECTING SILICON OR SILICON CARBIDE ELECTRODE SURFACES FROM MORPHOLOGICAL MODIFICATION DURING PLASMA ETCH PROCESSING



(57) Abstract: Methods for forming a protective polymeric coating on a silicon or silicon-carbide electrode of a plasma processing chamber are provided. The polymeric coating provides protection to the underlying surface of the electrode with respect to exposure to constituents of plasma and gaseous reactants. The methods can be performed during a process of cleaning the chamber, or during a process for etching a semiconductor substrate in the chamber.

WO 2006/049954 A2