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

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
29 September 2005 (29.09.2005)

PCT

(10) International Publication Number
WO 2005/091338 A2

(51) International Patent Classification[7]: H01L 21/00

(21) International Application Number: PCT/US2005/007750

(22) International Filing Date: 8 March 2005 (08.03.2005)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
10/803,342 17 March 2004 (17.03.2004) US

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

(72) Inventors; and

(75) Inventors/Applicants *(for US only)*: **KOEMTZOPOULOS, Robert, C.,** [US/US]; 8008 Pineville Circle, Castro Valley, CA 94552 (US). **ADAMS, Yoko, Yamaguchi** [JP/US]; 3665 Langdon Common, Fremont, CA 94538 (US). **MIYAMOTO, Yoshinori** [JP/JP]; 6 24-4 Sagamihara, Sagamihara-shi, Kanagawa (JP). **TAYLOR, Yousun, Kim** [US/US]; 1715 Shamrock Avenue, Santa Clara, CA 95051 (US).

(74) Agent: **LEE, Michael, B.**; Beyer Weaver & Thomas, LLP, P.O. Box 70250, Oakland, CA 94612-0250 (US).

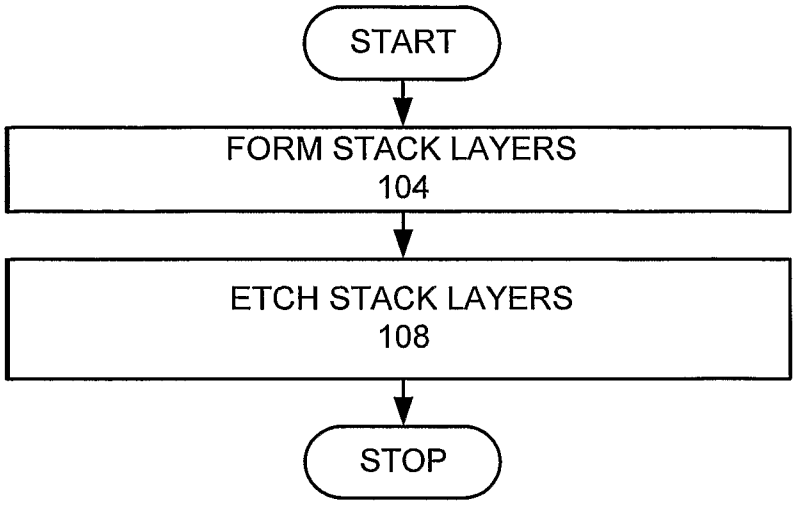
(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, 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, 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).

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: DUAL DOPED POLYSILICON AND SILICON GERMANIUM ETCH



(57) Abstract: A method for etching a stack with at least one silicon germanium layer over a substrate in a processing chamber is provided. A silicon germanium etch is provided. An etchant gas is provided into the processing chamber, wherein the etchant gas comprises HBr, an inert diluent, and at least one of O_2 and N_2. The substrate is cooled to a temperature below 40° C. The etching gas is transformed to a plasma to etch the silicon germanium layer.

WO 2005/091338 A2