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

CORRECTED VERSION

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
14 June 2001 (14.06.2001)

PCT

(10) International Publication Number
WO 01/041973 A3

(51) International Patent Classification[7]: H01L 21/321, C09G 1/02

(21) International Application Number: PCT/US00/42522

(22) International Filing Date: 1 December 2000 (01.12.2000)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/169,382 7 December 1999 (07.12.1999) US

(71) Applicant: CABOT MICROELECTRONICS CORPORATION [US/US]; 870 Commons Drive, Aurora, IL 60504 (US).

(72) Inventors: WANG, Shumin; 1006 Dakota Circle, Naperville, IL 60563 (US). CHOU, Homer; 1800 West Cottonwood Trail, Hoffman Estates, IL 60195 (US).

(74) Agent: TURNER-BRIM, Phyllis, T.; Cabot Microelectronics Corporation, 870 North Commons Drive, Aurora, IL 60504 (US).

(81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, 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, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW.

(84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

Published:
— with international search report

(88) Date of publication of the international search report:
3 January 2002

(48) Date of publication of this corrected version:
15 August 2002

(15) Information about Correction:
see PCT Gazette No. 33/2002 of 15 August 2002, Section II

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.

WO 01/041973 A3

(54) Title: CHEMICAL-MECHANICAL POLISHING METHOD

(57) Abstract: The present invention provides a method for chemically-mechanically polishing a substrate comprising tantalum and a conductive metal (other than tantalum). The method comprises (a) applying to the substrate a conductive metal-selective polishing composition and a metal oxide abrasive, (b) selectively removing at least a portion of the conductive metal as compared to the tantalum from the substrate, (c) applying to the substrate a tantalum-selective polishing composition and a metal oxide abrasive, and (d) removing at least a portion of the tantalum as compared to the conductive metal from the substrate. In one embodiment, the conductive metal-selective polishing composition is any such polishing composition, and the tantalum-selective polishing composition comprises a persulfate compound and a passivation film-forming agent for the conductive metal. In another embodiment, the conductive metal-selective polishing composition comprises a persulfate compound and optionally a passivation film-forming agent for the conductive metal, and the conductive metal-selective polishing composition or the polishing process is adjusted to render the conductive metal-selective polishing composition a tantalum-selective polishing composition, such as described above.