

(19) World Intellectual Property Organization
International Bureau



G00002

(43) International Publication Date
1 August 2002 (01.08.2002)

PCT

(10) International Publication Number
WO 02/059393 A1

(51) International Patent Classification⁷: **C23F 3/06**,
C09G 1/02, H01L 21/321

(21) International Application Number: PCT/US01/48867

(22) International Filing Date:
18 December 2001 (18.12.2001)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
09/745,266 20 December 2000 (20.12.2000) US

(71) Applicant: **HONEYWELL INTERNATIONAL INC.**
[US/US]; 101 Columbia Avenue, P.O. Box 2245, Morris-
town, NJ 07960 (US).

(72) Inventors: **ZHANG, Fan**; 620 Sonia Way, Mountain
View, CA 94040 (US). **TOWERY, Daniel**; 4998 Avenida
De Los Arboles, Santa Clara, CA 95051 (US). **LEVERT,**

Joseph; 1500 Shadowridge Rd., Apt. 90, Vista, CA
92083 (US). **MUKHERJEE, Shyama**; 2470 Pinto Court,
Morgan Hill, CA 95037 (US).

(74) Agents: **CRISS, Roger, H.**; Honeywell International Inc.,
101 Columbia Avenue, P.O. Box 2245, Morristown, NJ
07960 et al. (US).

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

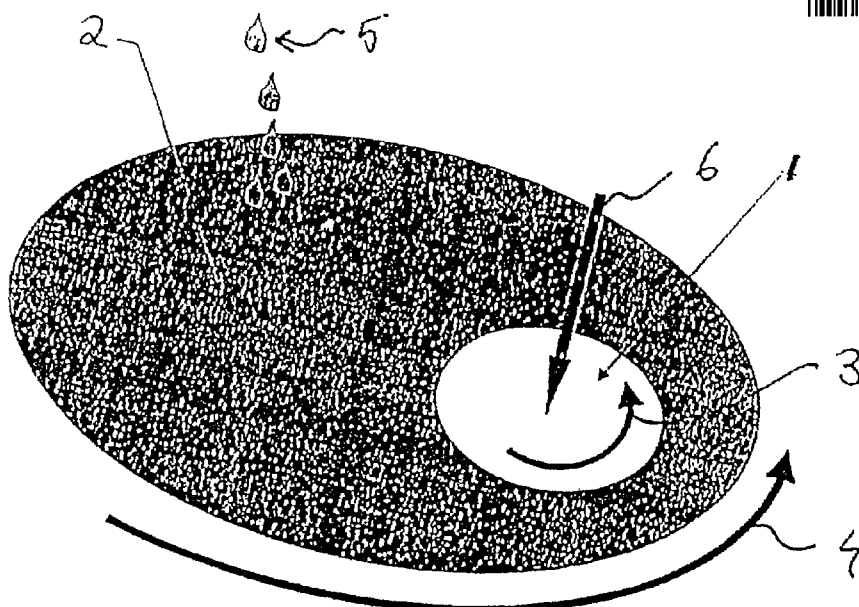
(84) Designated States (*regional*): ARIPO patent (GH, GM,
KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW),
Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),
European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR,
GB, GR, IE, IT, LU, MC, NL, PT, SE, TR), OAPI patent
(BF, BJ, CF, CG, CI, CM, GA, GN, GQ,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

[Continued on next page]

(54) Title: COMPOSITION FOR CHEMICAL MECHANICAL PLANARIZATION OF COPPER, TANTALUM AND TANTA-
LUM NITRIDE



162162



(57) Abstract: Chemical mechanical planarization or spin etch planarization of surfaces of copper, tantalum and tantalum nitride is accomplished by means of the chemical formulations of the present invention. The chemical formulations may optionally include abrasive particles and which may be chemically reactive or inert. Contact or non-contact CMP may be performed with the present chemical formulations. Substantially 1:1 removal rate selectivity for Cu and Ta/TaN is achieved.

52

WO 02/059393 A1



Published:

- with international search report
- 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.