



(51) International Patent Classification:

G03F 7/42 (2006.01) **H01L 21/027** (2006.01)
G03F 7/32 (2006.01) **B08B 3/00** (2006.01)

(21) International Application Number:

PCT/US2013/041629

(22) International Filing Date:

17 May 2013 (17.05.2013)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

61/648,951 18 May 2012 (18.05.2012) US

(71) Applicant: **ADVANCED TECHNOLOGY MATERIALS, INC.** [US/US]; 7 Commerce Drive, Danbury, Connecticut 06810 (US).

(72) Inventors: **COOPER, Emanuel I.**; 25 Atherstone Road, Scarsdale, New York 10583 (US). **CONNER, Marc**; 7 Commerce Drive, Danbury, Connecticut 06810 (US). **OWENS, Michael**; 7 Commerce Drive, Danbury, Connecticut 06810 (US).

(74) Agent: **FUIERER, Tristan**; Moore & Van Allen, PLLC, P.O. Box 13706, Research Triangle Park, North Carolina 27709 (US).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— with international search report (Art. 21(3))

(54) Title: COMPOSITION AND PROCESS FOR STRIPPING PHOTORESIST FROM A SURFACE INCLUDING TITANIUM NITRIDE

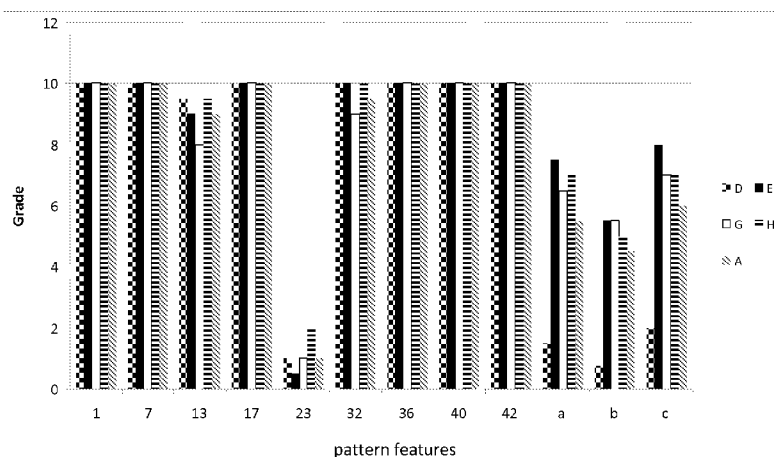


FIGURE 1

(57) Abstract: A method and low pH compositions for removing bulk and/or hardened photoresist material from microelectronic devices have been developed. The low pH compositions include sulfuric acid and at least one phosphorus-containing acid. The low pH compositions effectively remove the hardened photoresist material while not damaging the underlying silicon-containing layer(s) or the metal gate materials.