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(21) International Application Number: PCT/US99/06322 (22) International Filing Date: 23 March 1999 (23.03.99) (30) Priority Data: 09/046,869 24 March 1998 (24.03.98) US (71) Applicant: ENTHONE-OMI, INC. [US/US]; 21441 Hoover Road, Warren, MI 48089 (US). (72) Inventor: RODRIGUEZ, Danielle; 15520 Irene Court, Clinton Township, MI 48038 (US). (74) Agents: WARN, Philip, R. et al.; Harness, Dickey & Pierce, P.L.C., P.O. Box 828, Bloomfield Hills, MI 48303 (US).		(81) Designated States: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, 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, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TT, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG). Published <i>Without international search report and to be republished upon receipt of that report.</i>
(54) Title: DUCTILITY AGENTS FOR NICKEL-TUNGSTEN ALLOYS $\text{R}_1-\text{AR}-\text{S}(=\text{O})_2-\text{NH}-\text{R}_2 \quad (\text{a})$ $\text{R}_3-\text{S}(=\text{O})_2-\text{NH}-\text{R}_2 \quad (\text{b})$ $\text{R}_1-\text{AR}-\text{S}(=\text{O})_2-\text{OH} \quad (\text{c})$ (57) Abstract A tungsten alloy electroplating bath. Highly ductile tungsten alloy deposits are facilitated using a sulfur co-depositing ductility additive such as: (a) or (b) or (c), wherein R₁ is selected from the group consisting of H, alkyl, alkenyl, hydroxy, halogen, carboxy and carbonyl; "AR" designates a benzene or naphthalene moiety; R₂ is selected from the group consisting of H, or an alkyl sulfonic acid, a Group I or Group II salt of an alkyl sulfonic acid, a benzene, a sulfonate, a naphthalene sulfonate, a benzene sulfonamide, a naphthalene sulfonamide, an ethylene alkoxy, a propylene alkoxy; and R₂ may be attached to "AR" to form a cyclic moiety; and R₃ is selected from the group consisting of a benzene, a naphthalene, an unsaturated aliphatic group; and a benzenesulfonate group. The additive provides ductility improvements in tungsten alloy electroplates deposited from the solution.		