



INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁶ : C25D 11/04, 11/26	A1	(11) International Publication Number: WO 98/40541 (43) International Publication Date: 17 September 1998 (17.09.98)
(21) International Application Number: PCT/GB97/00664 (22) International Filing Date: 11 March 1997 (11.03.97) (71) Applicant (for all designated States except SD): ALMAG AL (IL/IL); Beit Hadfus Street 11, Givat Shaul, 34124 Jerusalem (IL). (71) Applicant (for SD only): DARBY, David, Thomas [GB/GB]; Northumberland House, 303-306 High Holborn, London WC1V 7LH (GB). (72) Inventors: HITERER, Misha; Ezel Street 6/11, 97854 Jerusalem (IL). SAMSONOV, Victor; Shlomo Ben Josef Street 203/27, 93805 Jerusalem (IL). (74) Agents: SENIOR, Janet et al.; Abel & Inray, Northumberland House, 303-306 High Holborn, London WC1V 7LH (GB).	(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IL, 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, TJ, TM, TR, TT, UA, UG, UZ, VN, ARIPO patent (GH, KE, LS, MW, SD, SZ, UG), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG). Published <i>With international search report.</i>	
(54) Title: PROCESS AND APPARATUS FOR COATING METALS (57) Abstract The invention provides a process for forming a ceramic coating on a valve metal selected from the group consisting of aluminium, zirconium, titanium, hafnium and alloys of these metals. The process includes immersing the metal as an electrode in an electrolytic bath comprising an aqueous solution of an alkali metal hydroxide, providing an opposite electrode immersed in or containing the electrolyte liquid, passing a modified shaped-wave alternate electric current from a high voltage source of at least 700 V through a surface of the metal to be coated and the opposite electrode, wherein the modified shaped-wave electric current rises from zero to its maximum height and falls to below 40 % of its maximum height within less than a quarter of a full alternating cycle, thereby causing dielectric breakdown, heating, melting, and thermal compacting of a hydroxide film formed on the surface of the metal to form and weld a ceramic coating to the metal, and changing the composition of the electrolyte while the ceramic coating is being formed, the change being effected by adding an oxyacid salt of an alkali metal. The invention also provides apparatus for carrying out this method.		