Structure property correlation of electro-codeposited Cu-Al-V_2O_5 composite coating obtained from Al-V2O5 dispersed electrolyte

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The study depicts electro-codeposition of copper along with nano sized Al and ultrafineV_2O_5 particles as second phase reinforcements on copper substrate. Different compositions of Cu-Al-V_2O_5 composite coatings were prepared from acidic electrolyte with addition of 5 g/l Al and 10 g/l V_2O_5 particles in the deposition bath with 8 A/dm^2 current density both in the presence and absence of CTAB. Surface-mechanical characterizations of the coatings portray better hardness and wear resistance of composite coatings compared to unreinforced Cu coated sample. Aluminum in the coating maintains the electrical conductivity but provides little strengthening effect. (More in: Surface and Coating Technologies, 339 (2018) 111-123.) https://doi.org/10.1016/j.surfcoat.2018.02.012)