

## **Copper electroplating and corrosion of aluminium in pyrophosphate electrolyte containing SnO<sub>2</sub> nanoparticles**

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Conditions of electrochemical deposition of Cu-SnO<sub>2</sub> composite coatings on aluminium have been revealed without the intermediate layer usage. The coatings were electroplated from the slightly alkaline pyrophosphate electrolyte containing 1 g/l of nanocrystalline SnO<sub>2</sub> with particles 10-50 nm in size (the XRD determined crystallite diameter 6 nm) that are stable in the electrolyte. Cyclic voltammetry studies has shown that introduction of SnO<sub>2</sub> nanoparticles into this electrolyte diminishes the anodic current density and the quantity of electricity expended for aluminium oxidation thus retarding aluminium corrosion in the electrolyte under study. The increase in corrosion stability of aluminium in pyrophosphate electrolyte containing SnO<sub>2</sub> nanoparticles was also confirmed by the gravimetric experiment on the Al behavior in this electrolyte as a corrosive media. As a result the deposited Cu-SnO<sub>2</sub> coatings despite very small SnO<sub>2</sub> content (less than 1 %) are characterized by good adhesion to aluminium substrate and fine-grained nonporous microstructure.