

Preparation of chemical nickel coatings on a polymeric substrate from ecological electrolite

V. Chakarova⁽¹⁾, M. Georgieva⁽²⁾, M. Petrova⁽¹⁾, E. Dobрева⁽²⁾

⁽¹⁾*Institute of Physical Chemistry – Bulgarian Academy of Science
“Akad. G. Bonchev” str., bl. 11, Sofia, Bulgaria*

⁽²⁾*Technical university - Sofia*

The chemically obtained nickel coatings have a number of advantages: uniformity regardless of the complexity of the work-piece, high corrosion resistance, microhardness. Electroless nickel plating is autocatalytic reduction of nickel ions at the interface of a heterogeneous system: metal / electrolyte. The surface to be subjected to chemical nickel plating must be catalytically active to initiate the deposition process. As a catalyst, the base metal acts in a pure state or pre-activated with metal-catalyst embryos.

In the present work, nickel nano- powders from electrolytes without a reducer are obtained. Its role is performed by Sn²⁺ ions adsorbed on the surface of the dielectric during the activation process. Different concentrations of Sn and Pd in the activating solution, operating conditions and the main components of the chemical nickel electrolyte over the thickness of the deposited coating were investigated. The morphology and elemental composition of the coatings are identified by energy-dispersive spectroscopy.

Acknowledgement: The authors are grateful for the financial help of Project DN19/1