

Improving the Electrical Conductivity of Epoxy Coating Using Carbon Nanotube by Electrodeposition Method

Authors : Mahla Zabet, Navid Zanganeh, Hafez Balavi, Farbod Sharif

Abstract : Electrodeposition is a method for applying coatings with uniform thickness on complex objects. A conductive surface can be produced using the electrical current in this method. Carbon nanotubes are known to have high electrical conductivity and mechanical properties. In this report, NH₂-multiwalled carbon nanotubes (MWCNTs) were used in epoxy resin with different weight percent. The weight percent of incorporated MWCNTs into the matrix was changed in the range of 0.6-3.6 wt% to obtain a series of electrocoatings. The electrocoats were then applied on steel substrates by a cathodic electrodeposition technique. Scanning electron microscopy (SEM) and optical microscopy were used to characterize the electrocoated films. The results illustrated the increase in conductivity by increasing of MWCNT load. However, at the percolation threshold, throwing power was dropped with increase in recoating ability.

Keywords : electrodeposition, carbon nanotube, electrical conductivity, throwing power

Conference Title : ICNMN 2015 : International Conference on Nanostructured Materials and Nanotechnology

Conference Location : Miami, United States

Conference Dates : March 09-10, 2015