

# **Nanocomposites and nanomaterials (one of the thematic areas of International research and practice conference "Nanotechnology and nanomaterials")**

## **Polymer-polymer and polymer-mineral conductive composites**

**N.V.Matsyuk, V.S. Dutka, G.M. Zastavska**

*Ivan Franko Lviv National University, 6 Kyryla&Mefodia, Lviv 79005, Ukraine  
E-mail: email.of.natalia.matsyuk88@ukr.net*

Conducting polymer-polymer and polymer-mineral composites have attracted much special interest due to their unique characteristics. Special interest of researchers is focused on the polymer-polymer composites and polymer composites in which as the mineral component is inorganic oxide used [1, 2].

The aim of our work was to study the condition of the synthesis, connection between the structure and conductivity of polymer-polymer composites (PPC) and mineral composites based on polyaniline and nanostructured zinc oxide. The formation of conductive polymer-polyaniline performed in a solution of polyvinyl alcohol (PVA), polymetakrylic acid (PMAK) and copolymer styrene and maleic acid by oxidative polycondensation reaction of aniline and its derivatives peroxydisulfat ammonium. By the method viscometry and electrically conductivity shows that between macromolecules polymer - matrix interaction and aniline there. The polymer influences the kinetics of formation of polyaniline during the oxidative polycondensation obtained polymer-polymer composites possess of film forming properties. As method to composite based on polyaniline and nanostructured zinc oxide formation of polymerization in-situ was employed. The zinc oxide nanoparticles used with size <50 nm. The surface morphology of composites based on polyaniline and nanostructured zinc oxide was studied by scanning electron microscopy (SEM). SEM image of the composite polyaniline-ZnO is characterized by homogeneous structure. We controlled electroconductivity of obtained composites by input the ZnO in different amounts. For composites is typical neighbor and middle order of the structure of substances and it may changes. With increasing content of ZnO in composites is results to complete amorphization sample.

1. *Chuanbo Hu, Ying Li, Yazhou Kong, Yushi Ding* Preparation of poly(o-toluidine)/nano ZnO/epoxy composite coating and evaluation of its corrosion resistance properties // Synt. Met.- 2016.- 214.-P. 62-70
2. *Singla M. L., Sehwawat R., Rana N., Singh K.* Dielectric behaviour of emeraldine base polymer-ZnO nanocomposite film in the low to medium frequency // J Nanopart Res. - 2011. - **13**. - P. 2109-2116.