About the features of electric conductivity models for polymer composite nanomaterials based on Cu(Cu$_2$O)-LDPE

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Polymer nanocomposites based on Cu(Cu$_2$O)-LDPE with a volume fraction of $0.1-0.4$ copper filler in the form of spherical nanoparticles with sizes from 10 to 25 nm were synthesized. The electrical conductivity of such composite nanomaterials was measured, which is $4.5-5$ times higher than the electrical conductivity of a polyethylene matrix. To predict the electrical conductivity of such materials, an analysis of well-known mathematical models is carried out and models for predicting the electrical conductivity of such materials are selected that are adequate to the experimental data.

Keywords: polymer nanocomposite, electrical conductivity, metal-dielectric composites, mathematical models, Cu(Cu$_2$O) filled polymer, low density polyethylene.

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