

Thin Graphene Oxide - Ag Film with Hydrophobic Properties

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Abstract

Thin layer of graphene oxide modified with special biosynthetically prepared silver nanoparticles was studied for surface properties. The observed effect of hydrophobicity enhancement at small weight percentage addition of silver nanoparticles was analysed observing morphology and structure changes in comparison to the bare graphene oxide thin layer (Fig.1). The effect can be caused by different arrangement graphene sheets on the surface of thin film, where individual layers are creating rough surface. Additional effect of phytosynthetically prepared nanosilver particles [1], where boosted interactivity of both nanocomposite components is caused by organic functional groups of inorganic nanoparticles, is another aspect of hydrophobic behaviour. Morphology and chemical composition of the prepared material can be great candidate for various medical applications, where antimicrobial [2], antiviral or biofouling effect is expected. The differences in amount of attached water molecules were confirmed using infrared spectroscopy. Thermal analysis revealed higher stability of the material with nanosilver.

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References

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Figures

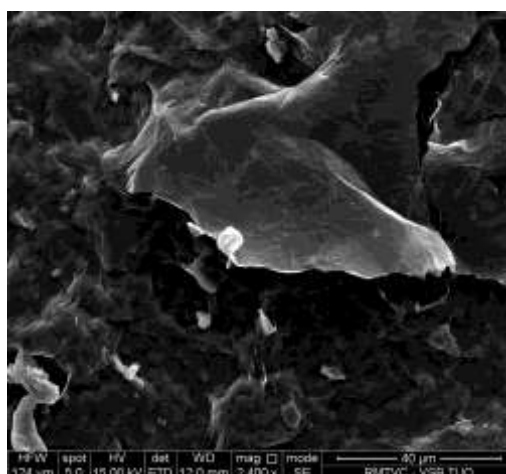


Figure 1: Morphology of thin film surface observed with scanning electron microscopy