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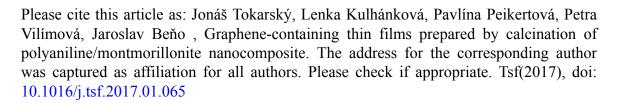
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CCEPTED MANUSCRIPT

Graphene-containing thin films prepared by calcination of

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Abstract

Polyaniline/montmorillonite nanocomposite thin films deposited on the surface of quartz glass were

used for the preparation of graphene/aluminosilicate thin films by calcination at 1300 °C in argon

atmosphere. Presence of graphene formed from polyaniline chains was confirmed by Raman

spectroscopy. Such prepared graphene/aluminosilicate thin films exhibit very high electrical

conductivity (maximum value $\sigma = 9324 \text{ S} \cdot \text{m}^{-1}$ was reached) in comparison with uncalcined

polyaniline/montmorillonite thin films having a maximum conductivity one order of magnitude lower

 $(\sigma = 396 \text{ S} \cdot \text{m}^{-1})$. The maxima of electric current observed for the calcined thin films in current

distribution maps obtained by an atomic force microscope operated in scanning spreading resistance

microscopy mode are five times higher than the maxima observed for the uncalcined thin film. Current

distribution maps also show the key role of montmorillonite particles in the formation of graphene.

Keywords: Graphene; Polyaniline; Montmorillonite; Thin Film; Conductivity; Calcination

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