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Laminated, composite and sandwich films (membranes) based on graphene-oxide with nano-textiles

Karel Klouda, Petra Roupcova, Lucie Gembalova, Eva Kuzelova-Kostalova and Jiri Chvojka
Technical University of Ostrava, Czech Republic

This study describes preparation of Graphene-Oxide (GO) suspensions and their hybrid compounds, GO-biochar, GO-C_{60}, GO-$CF_{0.9}$, which are subsequently applied to nano-textiles using various techniques. This method was used to prepare composite and sandwich-type films or laminated nano-textiles. GO, GO-biochar and biochar were suspended in a suitable oligomer. Nanofibres (nanotextiles) were then formed using the electrospinning method with the content of the given fiber computations. Physical changes of these fibers were tested. PP fibers made of melt blown technology were doped with powdery GO, GO-biochar and biochar. After application of the cover layer were tested for filtration and adsorption capabilities-aerosol penetration. Relative arrangement in product (film) cross-sections was identified in products prepared using SEM analysis. Thermal stability of the products was determined using DTA, DSC analysis and compared to the stability of the nano-textiles. Chemical properties of GO allow several its modifications, partial reduction, creation of composites with metals and their oxides. Preparation and thermal analysis GO-TiO_2/PCl/GO-TiO_2 has been described as an example. The conclusion of the project suggests possible application of the products (films).

Biography

Karel Klouda, Associate professor from VSB-Technical University of Ostrava & Research Institute of Occupational Safety Prague. The main filed of her research is monitoring of ecotoxicity of nanomaterials based on graphene.

karel.klouda@vsb.cz

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