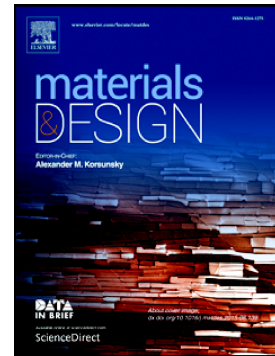


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Graphene-based masterbatch obtained via modified Polyvinyl Alcohol liquid-shear exfoliation and its application in enhanced polymer composites

Douglas A. Simon^{a, b}, Eveline Bischoff^{a, b}, Giovanna G. Buonocore^c, Pierfrancesco Cerruti^{d, e}, Maria G. Raucci^c, Hesheng Xia^f, Henri S. Schrekker^a, Marino Lavorgna^{c, e, *}, Luigi Ambrosio^c, and Raquel S. Mauler^{a, *}

^a Institute of Chemistry, Universidade Federal do Rio Grande do Sul – UFRGS, Av. Bento Gonçalves 9500, Porto Alegre-RS, 91501-970, Brazil

^b Instituto Federal do Rio Grande do Sul – IFRS – Campus Farroupilha, Av. São Vicente 785, Farroupilha-RS, 95180-000, Brazil

^c National Research Council, Institute for Polymers, Composites and Biomaterials, P.le E. Fermi 1, 80155 Portici (Naples), Italy

^d National Research Council, Institute for Polymers, Composites and Biomaterials, Via Campi Flegrei 34, 80078 Pozzuoli (Naples), Italy

^e National Research Council, Institute of Polymer, Composites and Biomaterials, Via Previati 1/C - 23900 Lecco, Italy

^f State Key Laboratory of Polymer Materials Engineering, Polymer Research Institute, Sichuan University, Chengdu 610065, China

*Corresponding authors: raquel.mauler@ufrgs.br and marino.lavorgna@cnr.it

Abstract: A simple and inexpensive method for the production of graphene-based masterbatch via polymer-assisted shear exfoliation of graphite in water was comprehensively investigated. In detail, a modified polyvinyl alcohol (mPVOH) characterized by surface energy comparable with that of graphene was used as surfactant for the production of graphene-like particles. The proposed approach allowed a yield in graphene-like particles higher than that obtained by using common surfactants, along with a narrower size distribution. A mPVOH-masterbatch containing 4.38 wt% of graphene-like particles was produced by removing the aqueous solvent from a dispersion and directly used for production of polymer nanocomposites by melt processing. Films prepared by blending the masterbatch with polyvinyl alcohol in order to have a graphene-

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