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# On the graphene nanoplatelets reinforcement of extruded high density polyethylene

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## **Abstract**

The present paper is dealing with the reinforcement of high density polyethylene (HDPE) matrix using pre-dried graphene nanoplatelets (GNPs). Nanocomposites of three different wt GNPs contents, i.e. 1%, 2% and 3%, were produced. The so-obtained extruded GNPs/HDPE nanocomposites underwent both tensile and three-point bending tests. Ultimate tensile strength was not affected by the GNPs content. However, the response on plastic deformation under tensile loading differed in each case, depending on the microstructure of the produced nanocomposites. Due to the weak Van der Waals forces that bond the graphene layers into a GNP, these layers are allowed to slip in the in-plane level and they were observed dislocated after tensile loading. Pores with high

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