# Silane treatment to enhance dispersion and interfacial bonding of carbon nanomaterials in acrylic polymer matrices

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Carbon nanomaterials (CNM), such as carbon nanotubes, graphene, graphene oxide, graphene nanoplatelets, display exceptional properties which have allowed their widespread application in several industry fields. In recent times, they have been used to modify the mechanical, electrical and thermal properties of the polymer materials [1-3]. In the case of adhesives, the addition of small amounts of graphene has also been shown to significantly improve the mechanical properties of the adhesive joints [4], however in order to obtain an improvement in mechanical properties a good dispersion of the nanomaterial must be achieved. Silane functionalization of graphene is a simple method to increase dispersion and enhance interfacial adhesion with the polymer matrix [5-6]. The aim of this study is to investigate the effect of (3-methacryloxypropyl)triethoxysilane (MPS) treatment on graphene. The successful reaction between the silane and functional groups of graphene was evidenced by the results of different characterization methods. These results show a better dispersion and stronger interfacial interaction between graphene and polymer matrix.

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