

Effect of functional group on the electrical and mechanical properties of ABS/RGO nanocomposites

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Graphene possess extraordinary properties. Chemical reduction of graphene oxide (GO) using reducing agent has been considered an efficient way to produce scalable method, but which limited dispersibility of CCG in high concentration is still a major challenge. Functionalization of the graphene nanosheets (GNSs) is required to improve their dispersibility in organic solvents or compatibility with polymers. However, it is also can lead to decrease the electrical property of FGSs. Functionalization and dispersion of GNSs are still important for their applications. Herein, we prepared the acrylonitrile butadiene styrene (ABS) composites using different types of RGOs using hydrazine (CCG) and phenylhydrazine (CCG-P) to discovery the effect of functional group on the GNSs. The improvement of mechanical property of ABS/CCG-P was higher than that of ABS/CCG at low loading of graphene (~0.5 wt.%), but the more loading of FGS, the less improvement of mechanical property in ABS/FGS. On the other hand, the improvement in the storage modulus of ABS/CCG was greatly increased with the graphene loading.