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The effect of gamma radiation on the stability of aqueous dispersions of graphene oxide and graphene oxide functionalized with amino-peg

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Nanocomposites based on graphene have been prominent in the field of biomedicine due to the biocompatibility with the physiological medium and the possibility of being functionalized by a series of biocompatible polymers, such as chitosan, polyethylene glycol, poly (caprolactone), among others. However, there is a need for sterilization of these nanomaterials in the medical field and gamma irradiation is a promising option. In the present work graphene oxide (GO), produced by the modified Hummers method, was functionalized with amino-PEG (GO-PEG-NH₂) through the amidation process. The objective of this study was to evaluate the aqueous dispersions stability of these nanomaterials before and after gamma radiation (Cobalt 60) at a dose of 25 kGy. Dynamics light scattering (DLS) was used to determine the zeta potential. The results showed no significant differences between the zeta potentials of the non-irradiated and irradiated graphene oxide. The dispersion of the functionalized graphene oxide showed to be stable and the irradiated unstable.