

Thermomechanical Properties of Poly(D, L-lactic-co-glycolic acid) and Graphene Oxide Nanocomposite for Scaffolds

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The thermomechanical and surface chemical properties of nanocomposite of poly(D, L-lactic-co-glycolic acid) (PLGA) were improved significant due to concentration of graphene oxide (GO) nanosheets as nanoscale fillers to PLGA film. Thermomechanical properties of the PLGA/GO (2 wt.-%) nanocomposite were decreased crystallization and melting temperature, weight loss. The storage and loss moduli of the nanocomposite were enhanced by chemical bonding between the oxygenated functional groups of the GO nanosheets and the polymer chains in the PLGA matrix. Enhanced hydrophilicity of nanocomposite caused by embedded GO nanosheets also improved for good biocompatibility. Our findings indicate that thermomechanical properties and biocompatibility of nanocomposite embedded with GO nanosheets are attractive candidates for use in biomedical applications such as scaffolds.

Keywords: graphene oxide nanosheets, nanocomposites, thermomechanical properties, scaffolds