

Graphene-Based Bionic Composites with Multifunctional and Repairing Properties

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Abstract

In this work, a novel bionic composite inspired by the concept of yeast fermentation has been proposed. It was observed that the addition of graphene nanoplatelets during the fermentation of extract of *Saccharomyces cerevisiae* fungi allows coupling of the graphene sheets to the yeast cell wall. This process resulted in the formation of a composite film with improved mechanical and electrical properties along with the capability of converting the light stimulus in the electrical signal. The mechanical properties of the prepared composites, namely, the fracture strength and Young's