Horacio Salavagione
Peter Shuttleworth, Gary Ellis, Marián A. Gómez-Fatou
ICTP-CSIC, Spain

horacio@ictp.csic.es

Preparation of graphene-based conducting coatings on multicomponent textiles

Conductive fabrics have attracted increased interest due to their potential use in areas such as energy, health and security, amongst others. In recent years there has been growing interest in the development of functional fibres and fabrics containing graphene, due to them being lightweight, and having excellent mechanical, electrical and thermal properties that graphene can impart to the materials.[1,2] The main objective of our ongoing project is the development of conductive fabrics through the incorporation of graphene into commercial polymeric fabrics. One of the approaches consists in the preparation of graphene-based coatings on textiles, more specifically coating the fabrics with graphene oxide (GO) and its subsequent reduction to obtain conductive fabrics. Both chemical and thermal reduction methods are evaluated in order to determine the best conditions to in which to achieve conductive properties, whilst preserving the textiles integrity. In addition, the effect of bending and washing cycles on the conductivity of the fabrics is evaluated.

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References

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[2] Scalable Production of Graphene-Based Wearable E-Textiles. N. Karim et al. ACS Nano, 2017-11-12266