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## Adsorption of graphene oxide onto synthetic fibers

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Research on graphene has captured the attention of different fields in science and industry. The properties of this material, high flexibility, thermal and chemical stability, and high thermal and electrical conductivity permit a great variety of applications. The adsorption of conductive substances onto both natural (cotton) and artificial (polyester, Lycra) textile materials appears promising for use in industrial applications because several important characteristics are produced, namely, conductivity, elasticity, lightness and flexibility. The importance of polyester fibers to the textile industry, researchers are very interested in improving their properties. Because polyester fibers normally contain no reactive chemical groups, they are not easily penetrated by dyes, and even dyeing polyester with disperse dyes is very difficult. Many phenomena that occur at solid liquid interfaces, such as wettability, particle aggregation, flotation, and dyeing, depend to a large extent on the type and magnitude of the surface and the interfacial free energy involved. In this work, we examine the adsorption properties of graphene onto synthetic polyester (PET) fibers. These adsorption processes depend on the surface properties of both materials. Determination of the surface free energy, together with studies of the zeta potential, assists in understanding the physical-chemical mechanisms that govern the interactions between textile fibers and particles or surfactants. We then describe an experimental investigation of the adsorption process of GO onto PET and how the process is improved when the PET is pretreated with surfactants substances.

### Biography

Ivan Plaza F is a Geologist by University of Granada (2003-2008), where he also completed his academic formation with Post-degree in Geological Engineering in Civil Engineering (2009-2010). Currently, he is doing his PhD in University of Jaen (student), where his research is about surface properties of materials (Graphene, Soils and Volcanic ash) in Physics Department. He has several publications on this subject in important journal as *Geoderma*, *Soil and Tillage*, *Catena* and *Dyes and Pigments*.

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