

Evaluation of the variables involved in the process of application of microcapsules to textile structures

Textile implementing microcapsules have expanded in recent years. More and more companies are showing their concern to characterize textiles once the microcapsules have been incorporated, or are even willing to develop their own. The Polytechnic University of Valencia (UPV) Research Group in Textile Industry (GIITEX) has developed a quantification microcapsules system on textiles, which sets the starting point of this research.

The microcapsules effect is usually measured by the presence of a property, such as the measure of odour when a flavour or fragrance are encapsulated. The characterization of fabrics impregnated with these active substances, has been carried out by using techniques and analytical methods to characterize the functionalization of these textile substrates.

Scanning Electron Microscopy (SEM) allows to know about the microcapsules status, location and distribution on the textile substrates surface. The particle counter counts the number of particles in the initial products baths as well as the residual baths after application and washing cycles. Spectroscopy Fourier Transform Infrared (FTIR) quantifies the presence of microcapsules on the fabrics surface, while the X-Ray Electron Spectroscopy (XPS) confirms that presence, both techniques being complementary to microscopy.

The aim of this project is to evaluate the properties of the used fabrics and the parameters of the various application processes used: impregnation, exhaustion, coating, and spraying, which have influence on the application of microcapsules on fabrics. The main objective is to be able to control and optimize the application processes.

Throughout the use and maintenance of fabrics some aggression occurs to them such as the scrub or the various washing cycles. The proper optimization of the parameters of each application process, more or less ensures the retention of microcapsules on fabrics against these agents.