MOLECULAR SELF-ASSEMBLING PROCESSES ON GLASS SURFACES: A STRATEGY TO GENERATE NEW FUNCTIONALITIES

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Silanization is one of the most used functionalization methods for modifying the physical and chemical properties of glass surfaces. The functionalized glass-surfaces have several applications in many fields, such as biosensors, antimicrobial agents, drug delivery, forensics, biochemistry, microfluidic systems etc. [1,2]. In order to obtain hydrophobic silica surfaces, organosilanes are the most used, which can modify the glass surfaces by forming self-assembled coatings via physical or chemical interactions. In other words, an organosilane molecule presents 3 parts: the surface-reactive group, which covalently attaches to the glass via the silanolic groups from the surface, the alkyl chain that induces hydrophobic properties, and the terminal group which imparts functionality to a silica surface [2,3]. Furthermore, hydrophobic surfaces have a high affinity for hydrophobic agents such as dyes, hormones, pesticides, etc. from the polluted waters. Based on these innovative glass surfaces, due to their self-assembling properties, these types of glass surfaces can be used in dyes removal [4].

In this study, the glass surface was modified by silanisation with triethoxyoctylsilane and further a hydrophobic dye was used to prove the self-assembling capacity as well as some potential applications derived from this two-steps surface modification. The as-obtained molecular bi-layer chemically bounded on the glass surface can be used as a sensor even for traces because these surfaces can accumulate the dye over a longer period of time. The systems were characterized by Fourier Transform Infrared (FTIR) spectroscopy and microscopy, scanning electron microscopy (SEM) and UV-Visible Spectroscopy.

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