DECORATION OF THE GLASS SURFACES WITH AgNPs USING THIO-DERIVATES

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Functional glasses are versatile, eco-friendly, and promising materials with a wide range of applications, like household, electronics, and biomedical applications (wound healing, bone regeneration, antimicrobial platforms etc.) [1]. Surface modification implies physical, chemical, or mechanical treatment of the surface and can drastically improve or modify surface activity [2]. The glass surface can be decorated with metal nanoparticles (silver nanoparticles – AgNPs being perhaps the most studied) to induce new or improved properties (reactive surface, antimicrobial activity, surface characteristics and affinity for specific agents, etc.). The affinity of the glass for metal NPs involved functionalization with thioalkylsiloxane as silanizing agents because "-SH" groups have a high affinity for several metal nanoparticles including Au and AgNPs. Likewise, the glass-platforms with thioalkylsiloxane decorated with AgNPs became active for the absorption of thio-derivates (aminoacids, drugs, dyes etc) [3,4].

In this study, glass-based platforms were developed using the surface functionalization methods and Ag NPs as decorating agent. The as-obtained glass-decorated platforms were characterized by Fourier Transform Infrared (FTIR) spectroscopy and microscopy, scanning electron microscopy (SEM), UV-Visible Spectroscopy and Inductively Coupled Plasma- Mass Spectrometry (ICP-MS) as well as their absorption capacity against several thio-derivatives.

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