

# Hybrid chitosan-mercaptopropyltrimethoxysilane films with Ag and Au nanoparticles: Synthesis and properties

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Flexible and transparent polymer complexes prepared by blending chitosan (CS) with about 1 M of oligo-mercaptopropylsiloxane were functionalized by incorporating silver or gold nanoparticles in a concentration range of 0.01 to 0.06 M. The heterosupramolecular polymeric materials obtained were characterized by chemical, spectroscopic, and morphological methods. Scanning electron microscope (SEM) and X-ray Spectroscopy (EDX) patterns of films indicate not only the homogeneous distribution of the components but also the morphological changes induced by the metal. Raman and UV-visible spectroscopic analysis as well as ionic conductivity after incorporation of ion-lithium point to a competition between metal-polymer and polymer-polymer interactions, which may be, to some extent, regulated by the nature and concentration of the metal. Due to the antiseptic effects of CS and noble metal nanoparticles, separately or synergistically coupled, the films produced would be potentially useful for de