



## Characterization by atomic force microscope (AFM) of graphene oxide and graphene oxide-PEG-NH<sub>2</sub> incorporated in bovine pericardium

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Atomic force microscopy (AFM) is a technique that allows images from the surface topography with high spatial resolution at Nano metric scales. AFM has being used in several fields in science such as Biology, Medicine, Chemistry and Pharmaceuticals. In this study, the technique was used to characterize graphene oxide and graphene oxide functionalized with amino-PEG (GO-PEG-NH<sub>2</sub>) in the bovine pericardium (BP) surface. The treatment of BP with GO and (GO-PEG-NH<sub>2</sub>) improved the mechanical properties of the biomaterial that will be used in the manufacture of cardiovascular device that is used to replace heart valves. For the BP coating, two different pathways were tested: 1) chemical pathway using solution containing 1-Ethyl-3-(3-dimethylaminopropyl) carbodiimide hydrochloride (EDC) and GO; and 2) in physical adsorption the incorporation were performed by ultrassom. The same procedure was performed to incorporate GO-PEG-NH<sub>2</sub>. The images of the BP with its modified surface were obtained by AFM and proof the efficiency in the two incorporation processes. The study also demonstrated the applicability of AFM to characterize incorporated nanomaterial in the biological samples.

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