



## The study of chemical and physical properties of Polyaniline-Graphene Oxide and Palladium Polyaniline-Graphene Oxide composites

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A Polyaniline (PANI)-Graphene Oxide (GO) composite was studied for the electrical activities. The GO was obtained by modified Hummers method. For the palladium nanoparticles (Pd-NPs) incorporation, it was established an environmentally friendly approach based on electron beam reduction. The chemical characterization was performed by Fourier Transform Infrared (FTIR) spectroscopy, Thermogravimetry (TG), X-ray Diffraction (XRD) and for the electrical properties Cyclic Voltammetry (CV) in alkaline medium and conductivity measurements. The FTIR spectroscopy and TG were used to obtain the composition of the synthesized materials, while XRD pattern indicated polymerization quality and the crystallization degree of the samples. The CV and conductivity measurements indicated the electrical activity of the composite. The results showed the GO amount was directly proportional to the resistivity of PANI, and when the Pd (Pd-Pani-GO) was present, the CV showed a larger current than the Pd-GO. The high electrochemical performance of the Pani-GO electrode could be due the increasing active sites for the deposition of polyaniline provided by large surface areas of graphene oxide sheets and the synergistic effect between polyaniline and GO. These results demonstrated the importance and great potential of graphene oxide in the development of high-performance conductivity system based on polyaniline.