PÔSTER - RESUMO - DISPOSITIVOS ELETRÔNICOS, ELETROQUÍMICOS, SUPERCAPACITORES E BATERIAS

CONTROL OF GRAPHENE OXIDE REDUCTION AND ITS IMPACT ON THE OPERATION OF ELECTROLYTIC TRANSISTORS

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Electrolyte-gated transistors (EGT) are devices that are widely used as biosensors due to their liquid medium operation inducing the formation of an electric double layer (EDL), which promotes typical low operational voltages and higher capacitances [1]. Reduced graphene oxide (rGO) has been used as EGT active layer (rGO-EGT) especially due to its excellent electrical conductivity and their oxygenated functional groups remained from the reduction process who gives to this material a rich surface chemistry which can be explored in functionalization processes [2]. The chemical reduction of graphene oxide (GO) through ascorbic acid (AA) is a more sustainable way to achieve these properties compared to hydrazine, a toxic reagent widely applied in this process [3]. In this work, we implemented and controlled the reduction process of GO into rGO through an in situ AA reduction and evaluated modifications of the typical rGO-EGT transfers curves. The influence of several parameters on the GO reduction such as pH, temperature and AA concentration was studied to establish the best scenario for the reduction through time. The rGO-EGT were obtained for 4 different reduction times, and their performance were studied. Correlating all studied parameters with the morphological and structural

characteristics of rGO obtained through 4 different reduction times allows for deeper knowledge into the material's physical-chemistry and enhance EGT performance for future applications as biosensor.

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Palavras-chave: electrolyte-gated transistors; reduced graphene oxide; sustainability.