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STUDY OF THE ADSORPTION OF CITRATE ONTO WELL-DEFINED SURFACE GOLD ELECTRODES

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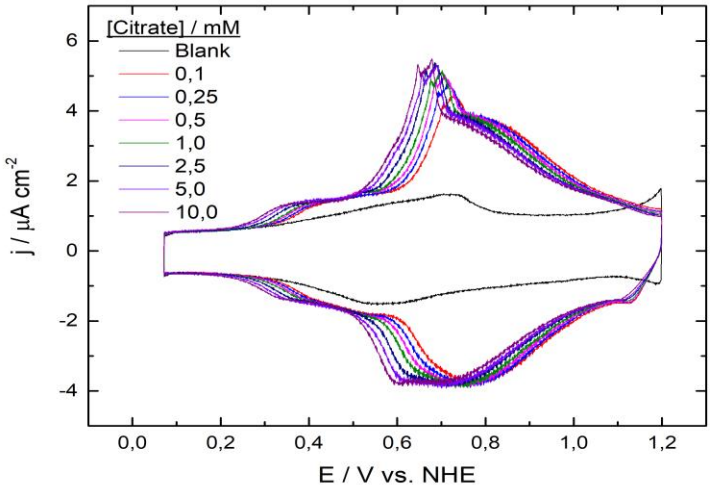
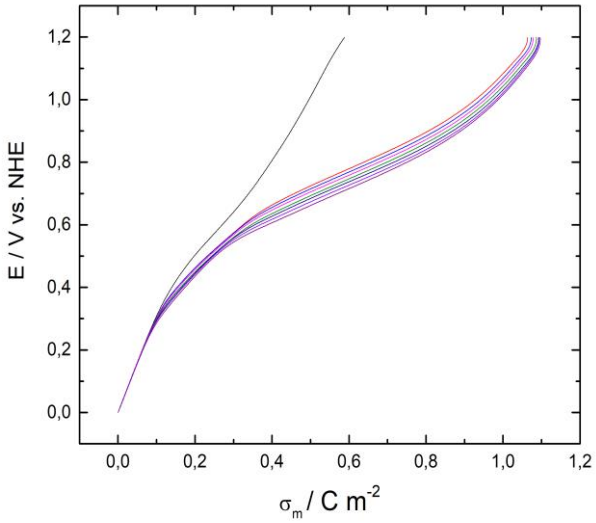
The catalytic properties of nanoparticles (NPs) are intimately related to both their shapes and size. Sadly, there is still a vast lack of knowledge in the way of how surfactants act on NPs synthesis, being almost all of them based on empirical results. These properties are of great importance in a wide number of electrochemistry reactions such as those involved in the electrochemical energy conversion and storage. Concerning that fuel cells and batteries are sensitive to the surface structure of catalyzers, it is of great importance to predict how their shape will be.

Here, supported by electrochemical experiments we show how a specific capping agent determines the shape of colloidal NPs. In this case, we have studied the adsorption of citrate on Au(111), Au(100) and (110) single crystal electrodes in solutions with different concentrations of citric acid, being $HClO_4$ 0.1 M the inert electrolyte. The procedure is exact as it was in the study of citrate adsorption on platinum electrodes, except for the fact that only the desorption current was taken to calculate the total charge densities. Later, both Gibbs excesses and electrosorption valencies were calculated for a complete thermodynamic analysis using the electrode potential and the charge as independent variables.





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