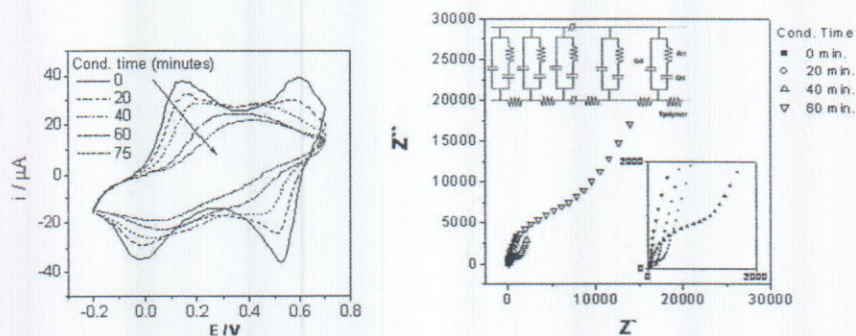# ICSM 2008

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Book of Abstracts

ous solutions was adjusted to 3.0 by the dropwise addition of HCl 1.0 mol L^{-1}. The sulphonated polystyrene (4.0 mg) was diluted directly in 20.0 mL of the aqueous solution with pH 3.0, resulting in the negative charged solution. Before each immersion in the polyelectrolytes solutions (3 minutes) the films were immersed in a washing solution (15 seconds) and dried at air atmosphere (5 minutes). The procedure was repeated 10 times forming respectively 10 bi-layers of PANI and PSS. Figure 1 shows the voltammograms obtained after consecutive degradation steps for the PANI-PSS film. This figure shows clearly an important decrease in the electrochemical properties during the degradation process. Figure 2 shows the nyquist diagrams for those conditions presented in Figure 1. It was described in the literature [4-7] that the transmission-line models are adequate to describe porous materials. The used model is presented as insert in Figure 2. Analysing the results, it was observed that the polymer resistance and capacitance remains unchanged during the degradation process. Otherwise, it was observed an important increase of the charge-transfer resistance. This resistance could be associated to the dopant ions transport though the interface polymer chain – solution in the pore. Therefore, the presented data suggest that the main effect during the electrochemical degradation of these materials is an important change in the ions transport characteristics.

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AN ARTIFICIAL TASTE SENSOR BASED ON BLENDS OF POLYURETHANE/POMA [PTh50]

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The incorporation of conducting polymer into a conventional polymer matrix has received considerable attention in the last decade because of the possibility of combining the good processability and mechanical performance of the conventional polymer with the electrical and optical properties of conducting polymer [1,2]. Among conducting polymers, polyaniline (PANI) and its derivated has been extensively used because of the low cost of raw material, ease of synthesis and environmental stability [3,4]. Although the poly(o-methoxyaniline) (POMA) show less electric conductivity than PANI, it has the advantage of being soluble in higher variety of solvent. In this work, blends films of Polyurethane (PUR) based on castor oil and Poly(o-methoxyaniline) (POMA) were deposited on to gold interdigitated electrodes by spin coating and characterized by UV-vis-NIR and FTIR spectroscopy. The UV-vis-NIR spectrum of PUR/POMA showed the same isobestic point characteristic of doped-undoped POMA. The FTIR spectrum showed the chemical reaction of -N= of the POMA with the -NCO of the isocyanate of the PUR. Five different sensing units of PUR/POMA blends were able to, in the doped state, to distinguish between solutions from NaCl, HCl, citric acid and sucrose, in the frequency range from 1 to 1MHz. (a) (b) Figure - Capacitances measured at 100 Hz for solutions expressing different tastes at room temperature: (a) Sensors undoped e (b) Sensors doped with HCl.

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EVALUATION OF A BIOSENSOR FOR PHENOLIC COMPOUNDS BASED ON A NANOSTRUCTURED CONDUCTING POLYMER [PTu61]

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Biosensors represent an interesting alternative for the detection of phenolic compounds. Many different approaches can be found in the literature including carbon-paste biosensors [1], graphite composite electrodes [2], conducting polymer modified electrodes [3], and silica sol–gel composite films [4]. Some of these methods are relatively complicated, require the use of several reagents and often the biosensor produced presents stability problems. For that reason new alternative biosensor designs for phenolic compounds are needed. In this work was developed a biosensor using nanostructured films fabricated by the layer-by-layer (LBL) technique of polyaniline (PANI), sulfonated lignin (LS), polyallylamine hydrochloride (PAH) and tyrosinase (Tyr) on ITO. The LBL technique proposed by Decher [5] provides a possibility of a minimizing protein denature during the adsorption process, because this is carried out in aqueous solutions. The study of tyrosinase films formation was evaluated by UV-Vis spectroscopy. The cyclic voltammetry (electrochemical measurements) was used with a cell of three electrodes. All measurements was realized in a phosphate buffer solution (PBS) at pH 7 and 0,1 mol/L. The scan rate was 50 mV/s and