STUDY POLYANILINE FILMS FOR SENSORS APPLICATION DISPOSABLES ORGANICS

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1. Introduction

The study of conjugated polymers with semiconducting properties has enormous potential for technological and commercial application. These materials have good chemical stability and a special doping mechanism that enables a wide variation in electrical conductivity, special condition for employment as devices for environmental monitoring and control and agribusiness [1]. In this work have been developed recyclable polymeric sensors may replace sensors made basic inorganic materials such as aluminum and gold.

2. Experimental

In this work were deposited layers of polyaniline films (PAni) on rigid and flexible substrates using the method of in-situ chemical deposition. Masks were prepared which served as templates for tread layers of polyaniline deposited on the substrates. The preparation of the films was carried out as a function of immersion time of the substrate in the reaction medium, changing the amount of deposited material, monitored by UV-Vis spectroscopy [2]. Solution A is prepared by addition of 5 ml of monomer in 300 ml of hydrochloric acid (1 mol). Solution B is prepared by adding 2.88 g of ammonium peroxodisulfate in 200 ml of hydrochloric acid (1 mol). The substrates are fixed within the container and slowly added to solution B in solution A with constant stirring for deposition of the films. At the end of polymerization, after removing the masks electrode tracks are obtained in the form of thin films on flexible and rigid substrates.

3. Results and Discussions

During chemical synthesis and from the UV-Vis spectroscopy measurements monitored at 830 nm was observed the growth of small nuclei (grains) of which adhere the substrates with mask that is immersed in the solution. These measurements indicate an increase of absorbance at 30 and 50 minutes for PAni films (Fig. 1). The procedures for cleaning and drying of substrates, as well as the control of the reaction medium temperature interfere with the quality of the adsorbed layers on the surface of the films. Atomic force microscopy measurements (AFM) adsorption function of time shows the growth of layers. The first nuclei grow avalanche-shaped, with a major part in the form of spheroids with low roughness and high homogeneity (Fig. 2).

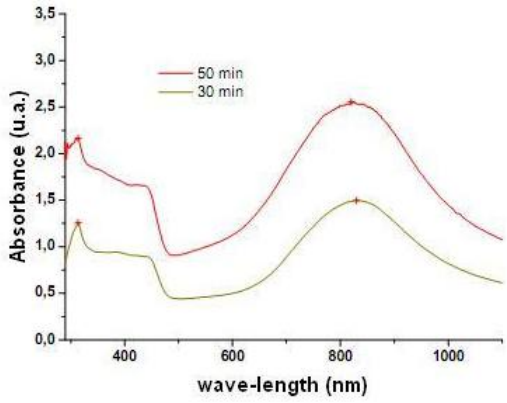

Fig. 1. *Spectroscopy UV-Visible POMA films 30 min (green curve) and 50 min (red curve).*

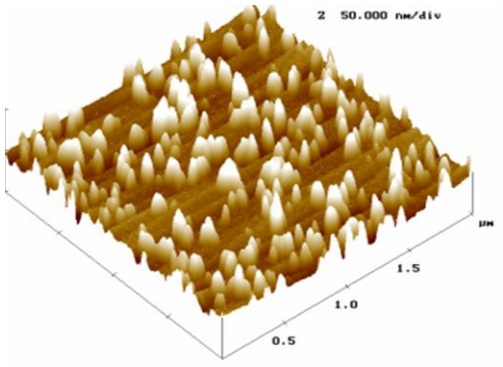

Fig. 2. *Atomic force microscopy to PAni films - 30 minutes.*

4. References

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