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Book of Abstracts

probe technique. A remarkable low percolation conductivity of $\approx 10\text{-}2\text{ S.cm}^{-1}$ for 2.5% of the doped conducting polymer in the blend. SAXS measurements were performed at the small-angle scattering workstation of the Synchrotron Light National Laboratory (LNLS), Campinas, Brazil. Spectra were taken for all samples for 1 hour using a wavelength of $\lambda = 1.7433\text{ \AA}$, at a sample-detector distance of 885.5 mm. The SAXS curves were obtained using a dimensional position-sensitive gas detector. NMR experiments were performed using a VARIAN INOVA spectrometer at 1H frequency of 400.0 MHz at $20 \pm 2\text{ }^\circ\text{C}$. A VARIAN 7-mm variable temperature probe head was used. $\pi/2$ pulse length of 4.0 ms, recycle delays of 10 s, and spin-diffusion mixing times from 0.1 to 4000 ms were used. It was observed from SAXS results that the incorporation of the PANI-CSA in matrix of the SEBS, decrease its lamellar thickness morphology and broadens the interface. In addition, it was concluded directly from the 1H-NMR spin-diffusion curves that the parameters not only broadens the interface between rigid and mobile components but also decreases the mobile phase fraction.

INFLUENCE OF THE SUPPORTING ELECTROLYTE CONCENTRATION ON THE FORMATION OF NANOWIRES OF POLY(3-METHYLTHIOPHENE) SYNTHESIZED BY AN ELECTROCHEMICAL TEMPLATE-FREE METHOD [PTu15]

Nanostructures fabricated from conducting polymers have attracted an increase in the interest in research due their physical, chemical and electronic properties, together with the wide range of potential applications in nanoscience. Templating techniques, such as those employing organic templates, ionic surfactants, silicates, polyelectrolytes, are commonly employed in the synthesis of nanostructured polymers, but such techniques can have the disadvantage of having to remove the template to obtain the nanostructured polymer. The electrochemical synthesis of conducting polymer is a technique that avoid the use of a template. In the literature it have been reported that polypyrrole microtubule [1] and polyaniline nanowires [2] could be synthesized by electrochemical polymerization. Compared to the template-synthesis method, the template-free method is simple and cheap because no micro or nano porous membranes are used as templates. The electrochemical synthesis provides easy control of the film thickness and allows an in situ characterization of the growing film and the films properties depends on of the electrochemical conditions used. In this work, the synthesis of nanowires of poly(3-methylthiophene) by an electrochemical template-free method is reported. The influence of the polymerization condition, such concentration of LiClO_4 , on the nanowires morphology was investigated. The monomer 3-methylthiophene was obtained from Aldrich. The electrolyte used was lithium perchlorate (Aldrich) in acetonitrile in two different concentrations: 0.1 and 0.3 mol.L^{-1} . Electrochemical experiments were carried out with a cell glass with an Ag wire used as quasi-reference electrode. Platinum foils were used as working electrode and counter electrode. The electropolymerization of poly(3-methylthiophene) was carried in solution containing 0.1 mol.L^{-1} monomer. The polymerization potential was 1.5 V. The morphology of poly(3-methylthiophene) depended strongly on the concentration of dopant used. As Figure 1 shows, an increase in the concentration of LiClO_4 favours the formation of fibrillar morphology. The SEM clearly shows that using LiClO_4 at the concentration of 0.1 M no poly(3-methylthiophene) nanowires were observed and a cauliflower morphology was obtained. However, using LiClO_4 at the concentration of 0.3 M the poly(3-methylthiophene) nanowires were formed. The highest concentration of the supporting electrolyte implies in higher conductivity [3]. The increase of the conductivity must provoke an increase in the occurrence of nanowires and this is in agreement with the behavior observed in the literature for polyaniline nanowires [2]. Acknowledgements: CNPq, CAPES, FAPESP

FERROELECTRICITY IN SYNTHETIC METALS: REALITY AND HYPOTHESES. [GMA3]

The ferroelectricity is one of demanded effects in fundamental and applied solid state physics. The most recent rise of R&D includes active gate materials and electric RAM in microelectronics, super-capacitors in portable communicators, sensors in medical imaging, etc. Till now, the ferroelectrics were available in the inorganic world, sometimes in more complex strongly insulating materials. The recent breakthrough [1], see reviews [2], was an unexpected discovery of the ferroelectricity, related to the charge ordering, in typical quasi-1D organic conductors (TMTTF)₂X, as well as and in some layered compounds like d-(EDT-TTFCONMe₂)₂Br [3]. The dielectric susceptibility, reaching the values ~ 106 , coexists with an unusually high conductivity, which gives rise to the material classified as the "ferroelectric narrow gap semiconductor". The

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