

Compact and Inflated PPy Films Visualized by Atomic Force Microscopy

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It is well known, properties (i.e. conductivity, surface morphology, bulk structure) of polypyrrole (PPy) films are dependent of some experimental conditions such as doping anion, over-potentials and electrosynthesis method. Some authors have reported effect of the different doping anions on the surface morphology of PPy films scanned by AFM and SEM. Recent reports indicated that in PPy films with thickness bellow 1 μm there are not any effect of the four used doping anions. However, for thicker films, significant differences in the average diameter, height and shape of the globular structures over all polymer surfaces were found in dependence of the used anions.

In the most current study, T. Hernández-Pérez et al.¹ have reported that surface morphology of PPy films, in its early growth stage, is dependent on the doping anion size, anion interchange and electrosynthesized method. In this communication, important morphological changes in the PPy surface and thickness (Compact and inflated bulk) when ClO_4^- and BF_4^- anions are used as doping anions were found. Results indicate very different size and shape of the nano-size PPy nodules can be visualized using one or other doping anion and potential limits to electrodeposition. In addition, compact or inflated PPy films can be obtained depending on experimental conditions.

1. T. Hernández-Pérez, M. Morales, N. Batina and, M. Salmon, *J. Electrochem. Soc.* in press, 2001.

