

Preparation and characterization of organic films by the electrooxidation of a thiophene imine derivative

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Abstract

2,2'-Dithienylimine was synthesized and electrochemically oxidized. The polymer was obtained on platinum or glass electrodes coated with tin oxide. The films were characterized with scanning electron microscopy, microprobes, and X-ray photoelectron spectroscopy. The coverage efficiency of the films was very high, but there were some morphological defects on the surfaces. Furthermore, there was some oxygen contamination not only on the surface but also in the bulk of the films. The nucleation and growth mechanisms responded to tridimensional instantaneous nucleation and bidimensional progressive nucleation contributions, which were consistent with the morphologies determined by scanning electron microscopy. The current-voltage characteristics exhibited a turn-on voltage of 5–6 V, which depended on the film thickness.