Abstract Submitted
for the MAR09 Meeting of
The American Physical Society

Highly Ordered Phases in Electrochemically Deposited Poly(3,4-ethylenedioxythiophene) (PEDOT)—LiBr[1] JINGHANG WU, SARAH SPANNINGA, DAVID MARTIN, University of Michigan — Poly(3,4-ethylenedioxythiophene) (PEDOT) is a widely used π-conjugated polymer of considerable current interest for a variety of different applications such as biosensors, antistatic layers, electroluminescent devices, and hole injection layers in organic light emitting diodes and photovoltaics. These films have high conductivity, as well as thermal and chemical stability. PEDOT films prepared by chemical or electrochemical polymerization with different counter ions have shown different levels of modest order and crystallinity, typically with limited molecular orientation and relatively small crystallites. We have developed methods for preparing highly ordered phases by the electrochemical polymerization of PEDOT onto polycrystalline conducting substrates with LiBr as the counterion. The polymerizations are conducted at room temperature from aqueous solution. These phases have ordered crystalline domains that are hundreds of microns in size, and are uniformly birefringent. The structure of the ordered phase was characterized by optical and electron microscopy, X-ray diffraction, as well as infrared and X-ray photoelectron spectroscopy.

[1]National Science Foundation

Jinghang Wu
University of Michigan

Date submitted: 25 Nov 2008 Electronic form version 1.4