Abstract Submitted
for the GEC10 Meeting of
The American Physical Society

Plasma polymerized PEDOT thin films by double discharge technique HILAL GOKTAS, TAYLAN GUNES, BETUL ATALAY, DOGAN MANSUROGLU, ISMET KAYA, Canakkale Onsekiz Mart University Physics Department Canakkale Turkey — Poly(3,4-ethylenedioxythiophene) (PEDOT) has emerged as the dominant class of polymers for optoelectronic applications due to their chemical and environmental stability, easy processability, high luminescence efficiency and excellent electronic-semiconducting properties. The way of producing organic thin film has a strong influence on the morphology and molecular structures. The synthesis of PEDOT thin films by superposing simultaneously a continuous and pulsed discharge and the characterizations of these samples are presented. The PEDOT thin films are synthesized for the first time by such technique. The substrates were ITO (indium tin oxide) and quartz glass plates and placed at different locations at the reactor to evaluate the influence of the position on the molecular structure of the obtained thin films. The FTIR and UV-visible results reveal that due to the fragmentation of the monomer during the film formation at plasma processes, the molecular structures of the synthesized thin films are different from that of the one produced by conventional techniques. Upon the iodine doping, the optical energy band gab (E_g) drops down from 2.9 eV to 2.2 eV.

Hilal Goktas
Canakkale Onsekiz Mart University Physics Department

Date submitted: 10 Jun 2010 Electronic form version 1.4