

PEDOT films were deposited by microwave (MW) and radio frequency (RF) plasma in a medium pressure of 0.02 Torr without precursor. In-situ optical emission spectroscopy (OES) measurement was carried out to determine plasma phase and to adjust discharge parameters. The other spectroscopic methods were used to characterize deposited thin films and to compare the effect of discharge parameters on the process. Conductivity values were found to be around up to  $10^{-5}$  S/cm for MW plasma, and  $10^{-8}$  S/cm for RF plasma deposited PEDOT films, without the addition of a doping agent. It was found that both plasma polymerization methods resulted in crosslinked PEDOT structures.