**Abstract**

Soluble polyaniline (PANI) doped with dodecylbenzene sulfonic acid (DBSA) was synthesized by chemical oxidation method and was cast on glass using homemade spray, a simple technology used for coating thin film in order to replace other costly complicated techniques. The PANI–DBSA was characterized by FTIR, XRD and UV–vis techniques. The TGA results illustrated that they are three major stages of weight loss of the PANI–DBSA sample. D.C. and A.C. study was performed by pelletizing the sample. D.C. conductivity obtained at room temperature was 3.753 × 10−3 S/cm. The A.C. conductivity and dielectric properties was analyzed in the frequency range 100–1000 kHz which indicates that the value of dielectric constant and loss tangent increases with increase in temperature and decreases with increase in frequency and in addition it supports the hopping mechanism. Current density–voltage (J–V) measurements was used to characterize ITO/PANI–DBSA/Al device. The value of various junction parameters such as ideality factor, barrier height and saturation current density was calculated.