**Abstract**

Soluble [polypyrrole](https://www.sciencedirect.com/topics/engineering/polypyrrole" \o "Learn more about Polypyrrole from ScienceDirect's AI-generated Topic Pages) (PPy) doped with dodecylbenzene [sulfonic acid](https://www.sciencedirect.com/topics/engineering/sulphonic-acid" \o "Learn more about Sulphonic Acid from ScienceDirect's AI-generated Topic Pages) (DBSA) was synthesized by [chemical oxidation](https://www.sciencedirect.com/topics/engineering/chemical-oxidation) method and was cast on glass using homemade spray, a simple technology used for [coating thin film](https://www.sciencedirect.com/topics/engineering/thin-film-coating) in order to replace other costly complicated techniques. FTIR, D.C. and A.C. study was performed on pellets of the sample, where FTIR spectrum revealed the presence of all characteristics transmission peaks and D.C. conductivity obtained at room temperature was 8.845 × 10−3 S/cm. The A.C. conductivity and [dielectric properties](https://www.sciencedirect.com/topics/physics-and-astronomy/dielectric-properties) of pellet analyzed in the frequency range 100–1000 kHz indicates that the value of [dielectric constant and loss](https://www.sciencedirect.com/topics/physics-and-astronomy/dielectric-loss) tangent increases with increase in temperature and decreases with increase in frequency and in addition it supported the hopping mechanism. Analysis of XRD, UV–visible and [diode](https://www.sciencedirect.com/topics/physics-and-astronomy/diodes) property for the film obtained using above mentioned novel technology was made, where a band gap of 2.21 eV obtained from [absorption spectrum](https://www.sciencedirect.com/topics/physics-and-astronomy/absorption-spectra) confirms its application in the field of solar cell. Current density–voltage (J–V) measurements was used to characterize ITO/PPy-DBSA/Al device. The value of various junction parameters such as [ideality factor](https://www.sciencedirect.com/topics/engineering/ideality-factor), barrier height and [saturation current density](https://www.sciencedirect.com/topics/engineering/saturation-current-density) was also calculated.