

Enhancing the Opto-electrical Properties of PEDOT based Thin Films by Combined Effect of Imidazole and PEG-PPG-PEG Surfactant via Vapor Phase Polymerization

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This paper outlines the combined effect of poly(ethylene glycol)-poly(propylene glycol)-poly(ethylene glycol) (PEG-PPG-PEG) triblock copolymer surfactant and imidazole on the opto-electrical properties of poly(3,4-ethylenedioxythiophene) (PEDOT) based thin films using ferric p-toluenesulfonate (FTS) as a catalyst via Vapor Phase Polymerization (VPP). Various PEDOT based thin films were synthesized using PEG-PPG-PEG surfactant and imidazole alone and also using them together in order to compare and correlate the combined effect of imidazole and surfactant on the properties of PEDOT based thin films. The results highlighted improved conductivity of the PEDOT films higher than 1300 S.cm^{-1} when the surfactant and imidazole were used together. PEG-PPG-PEG surfactants having different chain length were also examined in order to confirm the ideal conditions for preparation of VPP based PEDOT thin films.