

Electroluminescent polymers for blue light emission

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Abstract

A major development in the field of molecular electronics has been the discovery of electroluminescent conjugated polymers, that is, fluorescent polymers that emit light when excited by the flow of an electric current. These light emitting devices rely on very low cost organic materials and less energetic deposition techniques such as spray, dip, spin, ink-jet coating on large area, mechanically flexible, low-temperature processing and low overall cost. Organic light emitting diodes operate at low voltage thus saving energy. Our efforts are to develop polymers that emit stable blue light at lower operating voltage. In this presentation the synthesis of poly(p-phenylene) (PPP) and its derivatives will be discussed. These polymers were well characterized by ^1H and ^{13}C NMR, IR, UV-Vis and fluorescence spectroscopy, cyclic voltammetry, DSC, TGA and GPC. Color tuning of this material is achieved by introducing various solubilizing functionalities which also improved the thermal and electrochemical stability. Synthesis and optical properties of the above materials will be discussed.