Electrochemical fabrication of novel fluorescent Poly(pyrene-*co*-3-methylthiophene) polymeric film

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Poly(pyrene-*co*-3-methylthiophene), a new copolymer, was successfully synthesized by the direct electrochemical oxidation of a monomer mixture of pyrene and 3-methylthiophene in boron trifluoride diethyl etherate. The electrochemical performance of the copolymers was characterized by cyclic voltammetry. Ultraviolet visible (UV-vis) and Fourier transform infrared (FT-IR) were used to characterize the structure of the copolymers. In addition, the resulting copolymers were found to partially dissolve in some organic solvents (e.g., dimethyl sulfoxide). Fluorescence spectroscopy revealed that not only can the copolymers emit different photoluminescence under 365 nm UV light in the dimethyl sulfoxide solution, but also their emitting properties can be controlled by changing the monomer feed ratios.

Keywords: Electrochemical copolymerization, Conducting polymers, Poly(3-methylthiophene), Polypyrene.

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