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Synthesis and characterization of poly (verdazyl radical) using conducting materials

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Poly(terthiophene) pendant verdazyl radical was prepared via electrochemical oxidation of either the parent radical or its precursor (Scheme 1). The cyclic voltametry of the polymer exhibits features characteristic of verdazyl radical and terthiophene at 0.66 V and 1.14 V (vs. Ag/AgCl), respectively. A small positive shift (~120 mV) of the oxidation potential of verdazyl radical has been observed in the electroactive polymer. Verdazyl radical is a withdrawing component, which shift positively the oxidation potential of the other verdazyl radical present on the corresponding polymer. Due the presence of the verdazyl radical, the geometry of the polyterthiophene backbone is no longer planar. The loss of the planarity in doped polymer enhances the localization of the spin on the heterocyclic tetrazane, which explain the positive shift of the verdazyl radical in the polymer. Moreover, Interaction with the spin and the π - conjugated system has been observed by infrared.