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Copolymers of Pyrrole and α,ω-Dithienyl Terminated Poly(ethylene glycol)

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Abstract : This work presents synthesis of α,ω-dithienyl terminated poly(ethylene glycol) (PEGTh) capable for further chain extension by either chemical or electrochemical polymerization. PEGTh was characterized by FTIR and 1H-NMR. Further, copolymerization of PEGTh and pyrrole (Py) was performed by chemical oxidative polymerization using ceric (IV) salt as an oxidant (PPy-PEGTh). PEG without end group modification was used directly to prepare copolymers with Py by Ce (IV) salt (PPy-PEG). Block copolymers with mole ratio of pyrrole to PEGTh (PEG) 50:1 and 10:1 were synthesized. The electrical conductivities of copolymers PPy-PEGTh and PPy-PEG were determined by four-point probe technique. Influence of the synthetic route and content of the insulating segment on conductivity and yield of the copolymers were investigated.

Keywords : chemical oxidative polymerization, conducting polymer, poly(ethylene glycol), polypyrrole
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