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Heterophase Polymerization of Pyrrole and Thienyl End Capped Ethoxylated Nonyl Phenol by Iron (III) Chloride

Authors : Görkem Ülkü, Nesrin Köken, Esin A. Güvel, Nilgün Kızılcan

Abstract : Ethoxylated nonyl phenols (ENP) and ceric ammonium nitrate redox systems have been used for the polymerization of vinyl and acrylic monomers. In that case, ENP acted as an organic reducing agent in the presence of Ce (IV) salt and a radical was formed. The polymers obtained with that redox system contained ENP chain ends because the radicals are formed on the reducing molecules. Similar copolymer synthesis has been reported using poly(ethylene oxide) instead of its nonyl phenol terminated derivative, ENP. However, copolymers of poly(ethylene oxide) and conducting polymers synthesized by ferric ions were produced in two steps. Firstly, heteroatoms (pyrrole, thiophene etc.) were attached to the poly(ethylene oxide) chains then copolymerization with heterocyclic monomers was carried out. In this work, ethoxylated nonylphenol (ENP) was reacted with 2-thiophenecarbonyl chloride in order to synthesize a macromonomer containing thienyl end-group (ENP-ThC). Then, copolymers of ENP-ThC and pyrrole were synthesized by chemical oxidative polymerization using iron (III) chloride as an oxidant.

Keywords : end capped polymer, ethoxylated nonylphenol, heterophase polymerization, polypyrrole
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