

Self-assembled Poly(aniline-co-*p*-phenylenediamine) Nanorods via Aqueous/Ionic Liquid Interfacial Polymerization: Microwave-assisted Facile and Rapid Synthesis

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This report describes the facile microwave-assisted synthesis of self-assembled copolymer, poly(aniline-co-*p*-phenylenediamine) [poly(Ani-co-*p*PD)] nanorods via aqueous/ionic liquid interfacial oxidative polymerization in the presence of acid dopants; hydrochloric acid (HCl) and *p*-toluene sulfonic acid (*p*-TSA). The method is a reliable non-template approach with ease of synthesis and economic viability for synthesizing copolymer nanostructures. Morphology of synthesized copolymer nanostructures was investigated using FE-SEM and FE-TEM, which indicate the formation of one-dimensional (1D) nanorods with average diameter of 45–100 nm. FT-IR, XRD and UV-visible measurements were used to confirm the molecular and electrical structure of the doped copolymer. It is noticed that the electrical conductivity of copolymer nanorods depends upon the nature of the dopant used. We believe that this environmentally benign method can be used to synthesize nanostructures of other useful conjugated polymers.