

The Influence of Polymerization Rate on the Conductivity of Nanosized Polypyrrole Synthesized via Emulsion Polymerization

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Extended Abstract

Conducting nano-sized polypyrrole (PPy) was synthesized via emulsion polymerization. Sodium dodecyl sulphate (SDS) was used as surfactant and FeCl_3 was used as initiator and dopant agent. The samples were studied using different characterization techniques such as FTIR, SEM and four probe method for conductivity measurement. The rate of polymerization was controlled by different feeding rates of components to the polymerization reactor, reaction temperature and the type of dopant. The results of FTIR analysis indicated that the polymerization rate affected the extent of the p-conjugation length along the polymer backbone. Increasing p-conjugation length leads to an improvement in sample conductivity that confirmed by the results of four-probe test.