

Synthesis and Properties of Ionic Polyacetylene with Aromatic Functional Group

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An ionic conjugated polymer with aromatic functional groups, poly{2-ethynyl-N-[4-(methylthio)benzylpyridinium bromide]}, was synthesized via the activated polymerization of 2-ethynylpyridine by using 4-(methylthio)benzyl bromide without any additional initiator or catalyst. The polymerization proceeded well in polar solvents such as DMF, DMSO, NMP and pyridine, and produced high yields. NMR, IR, and UV-vis spectroscopy confirmed a conjugated polymer backbone system containing N-(4-(methylthio)benzylpyridinium bromide as substituents. The photoluminescence maximum peak of the polymer was located at 508 nm, which corresponds to the photon energy level of 2.44 eV. The cyclovoltammograms of the polymer exhibited an electrochemically stable window in the 1.32 to 1.92 V region.