

Electrochemical Properties of Poly(9,9-dipropargylfluorene) by The Ring-Forming Polymerization

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The conjugated cyclopolymer, poly(9,9-dipropargylfluorene), was prepared by the ring-forming polymerization of 9,9-dipropargylfluorene by (bicyclo[2.2.1]hepta-2,5-diene)dichloropalladium(II) in high yield. The chemical structure of poly(9,9-dipropargylfluorene) was characterized by such instrumental methods as NMR (^1H , ^{13}C), IR, UV-vis spectroscopies, and elemental analysis to have the conjugated polymer backbone bearing fluorene moieties. Poly(9,9-dipropargylfluorene) showed characteristic UV-vis absorption band at 307 and 324 nm and violet-blue PL spectrum at 411 nm, corresponding to a photon energy of 3.01 eV. The cyclic voltamograms of the polymer exhibited reversible electrochemical behaviors between the doped and undoped peaks. It was found that the kinetics of the redox process of polymer is controlled by the diffusion process mixed with the electron transfer process from the experiment of the oxidation current density of polymer vs. the scan rate.