# Synthesis and Characterization of Poly{2-[3-(1*H*-pyrrol-2-yl)phenyl]-1*H*-pyrrole} and Its Copolymer with EDOT[1]

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**Abstract**—A pyrrole-functionalized monomer 2-[3-(1*H*-pyrrol-2-yl)phenyl]-1*H*-pyrrole (PyPhPy) was synthesized. The structure of monomer was investigated by Nuclear Magnetic Resonance ($^1$H NMR) and Fourier Transform Infrared (FTIR) spectroscopy. The chemical polymerization of PyPhPy (CPyPhPy) was realized using $FeCl_3$ as the oxidant. The electrochemical oxidative polymerization of polymer P(PyPhPy) and its copolymer with 3,4-ethylenedioxythiophene poly(2-[3-(1*H*-pyrrol-2-yl)phenyl]-1*H*-pyrrole-co-3,4-ethylenedioxythiophene) [P(PyPhPy-co-EDOT)] were achieved via potentiodynamic method by using $NaClO_4$/$LiClO_4$ as the supporting electrolyte in $CH_3CN$. Characterizations of the resulting polymers were performed by cyclic voltammetry (CV), FTIR, scanning electron microscopy (SEM), UV–Visible spectrophotometry (UV–Vis) and thermogravimetry analyses (TGA). Electrical conductivity of CPyPhPy, P(PyPhPy), and P(PyPhPy-co-EDOT) were measured by four-probe technique.

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