

A novel synthesis of 3,6-bis(2,3-dihydrothieno[3,4-b][1,4]dioxin-5-yl)-9-tosyl-9H-carbazole

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Abstract 3,6-bis(2,3-dihydrothieno [3,4-b][1,4]dioxin-5-yl)-9-tosyl-9H-carbazole (EDOTTsCz) was synthesized and electrochemically polymerized on glassy carbon electrode (GCE) in 0.1 M tetrabutyl ammonium tetrafluoroborate (NB₄BF₄)/acetonitrile (CH₃CN). Alternating copolymer was formed by CV method. Modified polymer electrode was characterized by Fourier transform Infrared Spectroscopy-Attenuated Transmission Reflectance (FTIR-ATR), Cyclic voltammetry (CV), Scanning electron microscopy-Energy dispersive X-ray analysis (SEM-EDX), Atomic force microscope (AFM) and Electrochemical impedance spectroscopy (EIS). Capacitive behaviors of the modified GCE were defined via Nyquist, Bode-magnitude, Bode-phase and Capacitance plots. A modified copolymer electrode provides enhanced capacitance evaluation, which may results in performance in energy storage devices.

Keywords: Copolymer, Capacitance, Scanning electron microscopy (SEM), Atomic force microscopy (AFM)