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Electrochemistry, Electrochromic and Color Memory Properties of Polymer/Copolymer Based on Novel Dithienylpyrrole Structure

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Highlights

- A novel dithienylpyrrole derivative was designed and synthesized.
- The pTPhSNS and pTPhSNS-EDOT polymers by electrochemical polymerization possess similar cross-linked structure.
- The introduction of EDOT into TPhSNS by copolymerization maybe help to form the expected cross-linked polymer structure with excellent electrochromic properties.
- Both pTPhSNS homopolymer and pTPhSNS-EDOT copolymers exhibit the electrochromic color memory behavior with excellent color stability at the oxidative state.

Abstract.

A new dithienylpyrrole derivative, namely terphenyl bridged-di[2,5-di(2-thienyl)-1H-pyrrole] (TPhSNS), was designed and synthesized, then it was further prepared into cross-linked polymer (pTPhSNS) or copolymer (pTPhSNS-EDOT) with 3, 4-ethylenedioxythiophene (EDOT) via electrochemical polymerization. The cyclic voltammetry curves show that both the obtained pTPhSNS polymer and

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