

Electrochromic of photo patternable conductive polythiophene having azide pendant group

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Polymerizable monomer, 2-(azidomethyl)-2,3-dihydrothieno[3,4-b][1,4]dioxine (EDOT-MZ) was synthesized based on 3,4-ethylenedioxythiophene [1,2]. The polymer from the EDOT-MZ derivatives was deposited by both electrochemical and vapor phase polymerization method to produce conductive polymer thin film [2]. FT-IR spectroscopy confirmed the photo-cross linking originated from the azide functional group. Micro scale conductive photo patterns were generated by simple UV exposure onto PEDOT-MZ film through a photomask. The electrical and optical properties of the PEDOT-MZ pattern were examined by a cyclic voltammetry and UV-vis spectroscopy. Patterned electrochromic cells were made by the direct photo-patterning method that can be easily applicable in organic electrodes, electrochromic devices, integrated circuit, electrochemical light-emitting, and solar cells.

[1] A. E. Daugaard and S. Hvilsted, *Macromolecules*, 41, 4321 (2008).

[2] J. Kim, Y. Kim, and E. Kim, *Macromolecular Research*, 17, 791 (2009).