A Multi-color Electrochromic Material based on Organic Polymer

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With low-cost and simple processing, organic electrochromic polymers have attracted considerable attention as a promising material platform for flexible and low-energy-consuming optoelectronic devices. However, typical electrochromic polymers can only be switched from natural-colored to oxidized-transparent states. As a result, the complexity of combining several distinct polymers to achieve a multi-color gamut has significantly limited the niche applications of electrochromic polymers. Here we report an electrochromic polymer based on 5,7-bis(3,3-dimethyl-3,4-dihydro-2H-thieno[3,4-b][1,4]dioxepin-6-yl)-2,3-dihydrothieno[3,4-b][1,4]dioxine (PEP), which exhibits multi-color reversible tuning capability. This organic electrochromic material offers an effective approach to dynamic manipulate color and enables a variety of optoelectronic applications.

Keywords: multi-color; color tuning; single molecular template; conjugated polymer; electrochromic material

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