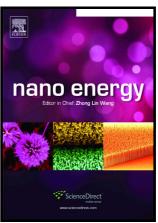
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Fast Switching Polymeric Electrochromics with Facile Processed Water Dispersed Nanoparticles

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Abstract

In this work, water dispersed electrochromic polymer nanoparticles (WDENs) prepared with miniemulsion process are introduced into electrochromic polymer (ECP) electrode for the first time. The poly [2, 3-bis-(3-octyloxyphenyl) quinoxaline-5,8-diyl-alt-thiophene-2,5-diyl]) nanoparticle (NP) electrode shows much faster switching speed than the compacted electrode (e.g. 2.10 s vs. 24.15 s for coloring, 8.65 s vs. 25.95 s for bleaching @ 0.4 V; 1.30 s vs. 9.20 s coloring and 1.7 s vs. 2.90 s for bleaching @ 1.0 V). Moreover, the potentiality of WDENs for universal ECPs is demonstrated. The microelectrochemical measurement indicates much more efficient counter-ion diffusion between the electrolyte and the NP films than the compacted

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