



Black-to-transmissive electrochromic device

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Experience:

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Market Needs:

Electrochromic (EC) materials and EC devices (ECDs) exhibiting various colors upon applying potential biases have been successfully used for commercial products such as anti-glare mirrors, sunglasses, displays, and solar-attenuated windows.

Our Technology:

Redox-active material, $\text{Fe}(\text{CN})_6$, successfully catalyzes the transition from Poly(II) to PolyCo(III) (Co-based metallo-supramolecular polymer, PolyCo), achieving colorless transparent state. An ECD based on PolyCo, and redox active material reacting with PolyCo to change its color from black state to colorless transmissive state is designed.

Strength:

The EC property of PolyCo shown in "Higuchi, M. et al., ACS Appl. Mat. Interfaces, 2015, DOI: 10.1021/acsami.5b02990.", achieves black-to-transmissive switching, but the transparency is still not satisfactory. In addition, PolyCo is limited only to an aqueous system. The present invention is to achieve the colorless transmissive state with the ECD utilizing PolyCo, and to develop non-aqueous system for the ECD, and also to improve mechanical durability of the ECD.

Competing Products:

Since relatively low driving-voltage is needed comparing to other technique such as suspension particles or liquid crystal, ECD is attractive in terms of energy-saving.

Intellectual Properties: US 2014/0333982A1

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