Short Communication

Multilayered Electrochromic Films of Metal Hexacyanoferrates Nanoparticles

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doi: 10.20964/2018.05.78

Received: 9 December 2017 / Accepted: 16 February 2018 / Published: 10 April 2018

Multi-layered thin films exhibiting electrochromism have been developed using sequential coating processes with water-dispersible nanoparticles of metal (Fe, Ni) hexacyanoferrates. To fabricate the multi-layered films, a simple method is developed to avoid re-dispersion of the water-dispersible film using a dip-washing process in aqueous solutions of metallic salt. On the one hand, the thickness of the multi-coated film of the nanoparticles of iron hexacyanoferrate (FeHCF: Prussian blue) is estimated to be 100 nm, 190 nm, 300 nm, and 420 nm for single, double, triple, and quadruple layers, respectively, and the optical absorbance of the multi-coated film shows dense color proportional to the number of coatings. On the other hand, the double-layered film composed of FeHCF and nickel hexacyanoferrate (NiHCF) layers of thicknesses estimated to be 110 nm and 840 nm, respectively, shows electrochromism among green, blue, and colorless, where green is the blend of the colors of FeHCF and NiHCF.

Keywords: electrochromism, Prussian blue, metal hexacyanoferrate, nanoparticle, multilayered film, spin-coating

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