

Electrochromic Coatings for Foils with Variable Transmittance

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ABSTRACT

Electrochromic (EC) device technology can be used for modulating the transmittance of visible light and solar radiation in windows in buildings as well as for other see-through applications. This paper emphasizes the great energy savings that can be achieved in the built environment, jointly with improved indoor comfort for the users of the building. Manufacturing aspects are then considered with particular focus on potentially low-cost roll-to-roll methods. In particular the paper discusses recent work on foil-type devices embodying sputter deposited WO_3 and NiO-based films joined by a polymer electrolyte. This paper also introduces a number of new results showing that double-sided antireflection coatings based on dip coating can enhance the transmittance significantly, that tandem foils can yield a ratio between bleached-state and colored-state transmittance exceeding fifty, that solar irradiance onto the EC device can enhance its charge insertion dynamics and thereby its optical modulation, and that electromagnetic noise spectroscopy may serve for quality assessment of EC devices.