

LPCVD Electrochromic WO₃ Layers on FTO Glass Substrates Using Different Substrate Temperatures

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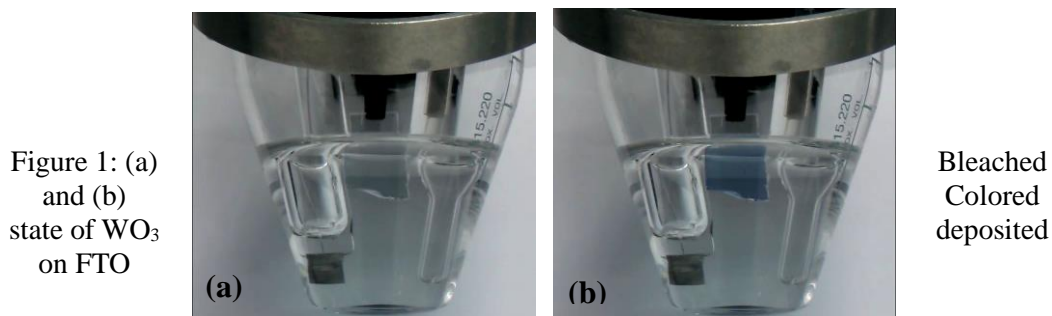
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Electrochromism is a reversible change in a material's optical properties (transmittance, absorbance and reflectance) under an applied voltage. Tungsten trioxide (WO₃) is a material with remarkable electrochromic properties, suitable for application such as solar permeability control in buildings (i.e. smart windows), variable reflectance mirrors and light shutters [1].

Thin films of WO₃ were deposited on Fluorine-doped tin oxide (FTO) coated glass substrates, using low pressure chemical vapor deposition. The structure, morphology and the subsequent electrochromic properties were found to be strongly depended on the growth temperature. The structural and morphological characterization of the samples was performed using x-ray diffraction, Raman spectroscopy and scanning electron microscopy respectively, while, using cyclic voltammetry, their time response from bleached to colored state (Figure 1), as well as the charge involved in the electrochromic process were determined.



References

[1] C.G. Granqvist, Handbook of Inorganic Electrochromic Materials, Elsevier Science, Amsterdam, 1995.

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