Fabrication and performance of electrochromic devices based on V_2O_5 and WO_3 thin films

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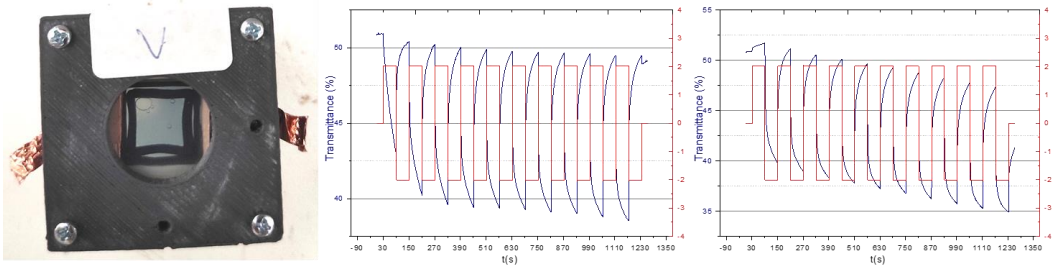
V_2O_5 and WO_3 thin films were successfully fabricated and optimized using the air carrier spray pyrolysis method and integrated into functional lab-scale electrochromic devices, the characterization of the as-developed thin films being published previously [1-5]. The devices were based on an electrochromic film on one side, a film acting as an ion storage on the other side and an electrolyte between them in the form of a gel, all components being held together in a sealed setup with terminals for electrical connections. The design and the construction of the device was completed through 3D printing technology and their evaluation was based on the recording of transmittance spectra at 650 nm, by alternating the applied voltage on the working electrochromic film. The effects on the overall performance of the device in relation with the type of material used (V_2O_5 or WO_3) and the applied voltage were examined and found to be the key features of the device performance. The results were very promising for the upscaling of the devices.



(a) **(b)** **(c)**

Figure 1: (a) Electrochromic lab-scale device with V_2O_5 film in one side and WO_3 on the other. Transmittance spectra of the device with (b) applied voltage on V_2O_5 and (c) on WO_3.

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