

Characterization of vanadium oxide films prepared by atmospheric pressure chemical vapour deposition

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ABSTRACT

Atmospheric pressure chemical vapour deposition was used for the deposition of pure and doped vanadium oxide coatings. The deposition was carried out on SiO₂ and SnO₂ substrate using VCl₄, H₂O and W(OC₂H₅)₆ at a range of temperatures (400-600°C). The optical constants were characterized by spectrophotometer (Figure 1), the crystal structure of the films by X-ray diffraction (Figure 2) and the stoichiometry of elements in each layer by Rutherford backscattering as well as the electrochemical properties of the films deposited on SnO₂. Results obtained demonstrate the various properties of pure and doped vanadium oxides at room temperature.

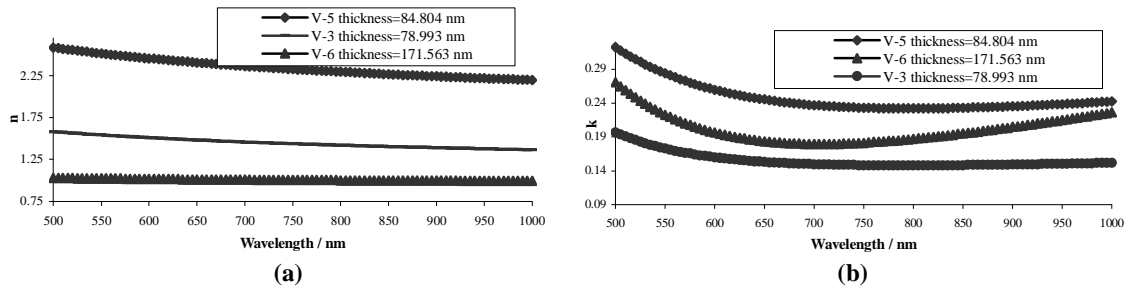


Figure 1 (a) Calculated refractive indices and (b) absorption coefficients versus wavelength for doped vanadium oxides as well as thickness at room temperature

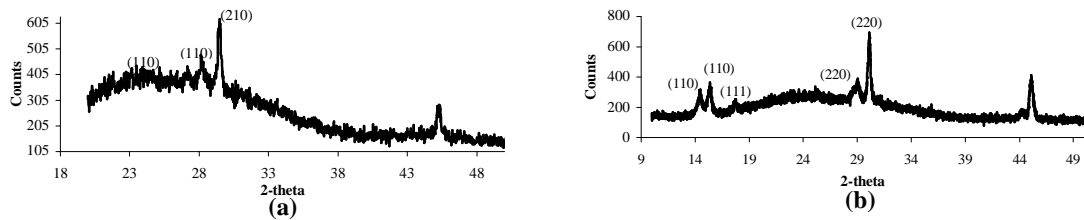


Figure 4 X-ray diffraction analyses of (a) pure and (b) doped vanadium oxides respectively.