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Structural optical magnetic properties of Co doped -MoO3sprayedthin films.

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Abstract: this works deals with the synthesis of Cobalt doped MoO3thin films which were grown on glass sub-strates by the spray pyrolysis at 460?C. First, X-ray diffraction analysis shows an orthorhombic structurerelated to -MoO3allotropic variety with (020) and (040) preferred orientations. The surface topogra-phy performed by atomic force microscopy (AFM) shows that the grain size varies from 150 to 280 nm.Second, optical parameters, such as optical band gap, Urbach energy, refractive index and dielectricconstants were studied in terms of Co content. This optical study shows a direct transition of all pre-pared thin films and normal dispersion of the refractive index showing both Cauchy and Wemple &Di-dominico variations. On the other hand, PL measurements show transition bands mainly in blue andgreen domains related to band-to-band transitions as well as to oxygen vacancy in all films. Finally, mag-netic measurements at room temperature using vibrating sample magnetometer (VSM) technique reveala ferromagnetic behavior of such doped films.

Keywords : MoO3, Thin films, optical properties, Magnetic Properties, Spray pyrolysis