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An Attempt to study (111) oriented NiO-Like TCO thin films in  
Terms of structural, optical properties and photocatytic activities  
under strontium doping

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## Abstract

This work covers some physical properties of Sr-doped NiO sprayed thin films at various concentrations (0 to 4%) prepared on glass substrates. Structural properties by using X-ray diffraction (XRD) show that all films have a cubic structure with (111) orientation. The stress, estimated by adjusting the XRD diffraction peaks increases with the doping concentration. Also, the grain size decreases with the doping concentration. On the other hand, the stacking fault probability has been discussed in terms of Sr doping level. The surface morphology of NiO: Sr thin films were examined by AFM observations. The optical constants (refractive index and extinction coefficient) were obtained by reflectance and transmittance measurements. This optical measurements show that the optical band gap is around 3.8 eV. PL measurements show mainly the transition band in UV blue and green domains related to the band-to-band transition and some defects in these prepared thin films. Finally, the advances in the actively studied photocatalysts that are emerging as effective alternate for nickel oxide based photocatalysts is also discussed.

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