

Optical Properties and UV Sensing Response of Nitrogen-doped TiO₂ Thin Film by CVD

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Abstract. This work was demonstrated a cold-wall chemical vapour deposition (CVD) setup to prepare nitrogen (N)-doped titanium dioxide (TiO₂) thin film on glass substrates, which presents semi-transparent yellowish surface. The prepared N-doped TiO₂ film is homogeneous and possesses polycrystalline anatase structure. The transmittance measurement was carried out in the ultraviolet-visible spectral region to evaluate the film thickness, optical constants, and the optical band gap was determined by Tauc plot. A metal-semiconductor-metal (MSM) ultraviolet (UV) photodetector by the Pt/N-doped TiO₂ film has shown a positive response towards UV illumination.