

# POLYMERIZATION CATALYSIS, FLEXIBLE POLYMER AND NANOTECHNOLOGY

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## A comparative study on the growth of $V_2O_5$ thin films at various substrate temperatures

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Pure vanadium pentoxide thin films were prepared by electron beam evaporation technique onto well cleaned corning 7059 glass substrates. The films were prepared at an oxygen partial pressure of  $2 \times 10^{-4}$  mbar and at substrate temperatures ranging from RT to 450°C. The deposited films were characterized to study the effect of substrate temperature on the structural and optical properties. As the films deposited at room temperature are amorphous in nature which was observed from XRD and Raman studies and confirmed by the AFM image, the studies are aimed at physical properties of the films deposited at substrate temperatures 250°C, 350°C and 450°C. The XRD data revealed the orthorhombic structure of the films with well-defined peaks and the crystallite sizes were calculated by Debye-Scherrer formula. The variation in crystallite size with respect to substrate temperature and the average grain size from AFM studies were also discussed. The Raman spectra of the films deposited at  $T_s$  from 250°C to 450°C are well resolved and exhibiting the polycrystalline nature of the films. The optical band gap values are calculated from the optical transmittance spectra.

### Biography

K V Madhuri is working as an Associate Professor in the Department of Science and Humanities, VFSTR University, Guntur, India. She also has the responsibilities as an Associate Dean, Research and Development in VFSTR Deemed to be University. She has completed her PhD from Sri Venkateswara University, Tirupati, India in 2003. She had worked as a Post-Doctoral Fellow at Universite de Moncton, New Brunswick, Canada from 2003-2005. Her studies involve the preparation and characterization of transition metal oxide thin films and their applications in chromogenic devices and gas sensors. She has contributed many research papers in national/international journals of repute. She also delivered invited lectures in reputed institute and conferences in India and abroad.

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