# Growth and Characterization of SnSe Films for Photovoltaic Applications

조해윤, 박진호†, 바수데바레디[1]
영남대학교; [1]영남대학교 화학공학과
(chperk@ynu.ac.kr†)

Tin monoselenide (SnSe) is considered one of the promising photovoltaic material due to its opto-electrical properties, earth-abundance, low-cost and low-toxicity compared to CdTe and PbTe. Thin films of SnSe have been successfully grown on corning glass substrates using chemical bath deposition (CBD). The as-prepared films were systematically characterized by XRD, Raman analysis and optical measurements.The XRD patterns for the films were recorded in 2Θ range of 20°-50°, at a scan-rate of 0.05° using CuKa (λ = 0.154 nm) radiation. All the reflection peaks in the diffraction pattern can be indexed to the orthorhombic crystal structure. The lattice parameters calculatedto be a=1.1557 nm, b=0.4127 nm and c= 0.4429 nm.Raman scattering analysis allowed the assignment of peaks at 107 cm−1, 130 cm−1 and 151 cm−1 to the orthorhombic SnSe phase. The optical properties of the SnSe deposited were investigated by the UV-Vis-NIR reflectance and transmittance spectrum measuredin the wavelength range of 300 - 2500 nm.The refractive index, extinction coefficient and energy band gap of the films was calculated. Hall-effect measurements showed p-type conductivity for all the SnSe films. The results will be presented and discussed.