

Abstract

Molybdenum disulfide (MoS₂) thin films have attracted attention because of their photoluminescence and optoelectronics properties that can be utilized for the development of photodetectors, phototransistors, and LEDs. This final project the optical, optoelectronic, and mechanical properties of MoS₂ thin film are studied. Electrical properties were tested by depositing MoS₂ on a PET substrate using the drop casting method and silver paste electrodes. The I-V curves were observed using Keithley 2400. The I-V curve characteristics show that in general, the MoS₂ is an insulator and the currents fluctuate in some samples. The currents vary from -9,49 nA to 11,25 nA with resistance was 5,109 GΩ. The current is increased from 10,96 nA to 12,91 nA when the sample is illuminated by 2,56 mW light. The current decreased when sample was given a mechanical pull with a strain of 4,67 %. In addition, the UV-Vis characterization shows exciton peaks at A and B at 540,5 nm and 445 nm, respectively, indicating that MoS₂ is still composed of multilayers. Spectra photoluminescence (PL) is dependent on the laser excitation wavelength. The 402 nm laser produced exciton peaks at the wavelengths of 495,5 nm, 461,1 nm, and 473,36 nm, the 420 nm laser at the wavelength of 524 nm, and the 532 nm laser at the wavelengths of 612,4 nm and 524 nm.

Key Word: *electrical properties, drop casting, MoS₂, Optoelectronic, optical properties, Photoluminescence, SEM/EDS*