ABSTRACT

Graphene 2D material produces many new innovations in the field of materials such as supercapacitors, lithium batteries and energy storage in solar cells. But among the good properties that graphene has, the ins and no gaps in graphene energy bands make the gaps in the material's energy bands not easily controlled like semiconductors. Dichalcogenide material that has semiconductor properties is proposed to be a complement to graphene and is usually combined into a heterostructure. In addition, heterostructure dichalgonide is also widely researched and produces interesting properties such as photodetektor..

In this Final Project the author studied the MoS2/WsS2 heterostructure created on top of the PET flexible substrate and produced in an open space by mechanical exfoliation method. Characterization of Raman spectroscopy is done using Xplora and HR Horiba Raman Spectrometer, laser excitation with wavelength of 532 nm and measurement range of 100-500 cm-1. MoS_2 and WS_2 vibration modes are observed quite clearly and characterize differences in monostructure materials and heterostructure materials. The development of the MoS_2/WS_2 multilayer heterostructure is expected to provide information on the characteristics of the materials used to facilitate analysis in the development of nanodevice-based electronic warfare needs in the future.

Keywords : MoS_2/WS_2 multilayer heterostructure, Raman spectroscopy, mechanical exfoliation method