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PREPARATION OF GRAPHENE/MOLYBDENUM DISULFIDE BASED ELECTRODES AND ITS ELECTROCHEMICAL PERFORMANCE IN SUPERCAPACITORS

MohdAsyadiAzam,

UniversitiTeknikal Malaysia Melaka, Hang Tuah Jaya, 76100 Durian Tunggal, Melaka, Malaysia

Abstract: Supercapacitor is highly promising energy device due to its electrical charge storage performance and significant lifecycle ability. Construction of the supercapacitor cell especially its electrode fabrication is critical to ensure great application performance. The purpose of this research is to fabricate the molybdenum disulfide (MoS2), graphene and G/MoS2 hybrid electrode and their usage as symmetric and asymmetric supercapacitors. The electrode was prepared by using a simple and facile slurry technique. By this, XRD was used to analyze the crystal phase and structure of the as-prepared graphene, MoS2, and G/ MoS2 hybrid. The peaks at 14.3°, 33.8°, and 57.5° are attributed to the (002), (100), and (110) plane of MoS2 crystal. From Raman spectroscopy shows the characteristic peaks of graphene (D, G and 2D) and MoS2 (E12g band at 377 cm−1 and A1g band at 403 cm−1) are retained in the Raman spectra of G/MoS2 which can confirm the fact that the hybrid of G/MoS2 is composed of MoS2 and graphene. Next, the XPS analysis was carried out to deduce the exact elemental composition of the G/MoS2. The full scan of the G/MoS2 gives the characteristic peaks for Mo 3d, S 2p, C 1s and O 1s with their corresponding binding energies.

Biography: He is an Associate Professor / Deputy Dean (Post Graduate Studies). He studied B.EHe is an Associate Professor / Deputy Dean (Post Graduate Studies). He studied B.Eng. Materials Science & Engineering (Shibaura Institute of Technology) M.Eng. Materials Science & Engineering (Shibaura Institute of Technology Ph.D. Materials Science (JAIST, Japan).
Email: asyadi@utem.edu.my

Publications :

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