**Abstract**

Molybdenum disulfide (MoS2) is a layered transition metal dichalcogenides (TMDs) and is anistropic in nature. It has remarkable physio-chemical properties such as large surface-to-volume ratio, distinctive electronic characteristic, tunable band gap, high carrier mobility, friction, catalytic and optical properties. Zinc oxide is one of the most versatile materials due to its excellent inherent properties of wide band gap, large exciton binding energy and high chemical stability. Molybdenum disulfide doped zinc oxide nanocomposites exhibited high stability, good repeatability and high sensitivity. These nanocomposites are synthesized by Microwave assisted method. The prepared nanocomposites are characterized by Scanning Electron Microscopy (SEM), Transmission Electron Spectroscopy (TEM), X-ray Diffraction Analysis (XRD) and Fourier-Transform Infrared (FT-IR) spectral and UV-Visible spectral Analysis (UV-Vis) and Raman Spectroscopy and Cyclic Voltammogram (CV) analysis for its morphological, structural, spectral, optical, and the electrochemical properties. The FT-IR spectra show absorption bands around 911 cm−1 and 1416 cm−1 confirms the presence of Mo-S stretching modes. The SEM and TEManalysis reveals that the synthesized MoS2/ZnO nanocomposites are spherical in shape and agglomerated. The UV–Visible spectra reveal the absorption edge is red shifted. The cyclic voltammetry measurement confirms that MoS2/ZnO nanocomposites have cyclic performance as an anode material and have electric double layer capacitance behaviour. These nanocomposites are one of the prominent materials with prospective application in the field of energy storage.