ABSTRACT

MXene is developing into a "rising star" material as a result of its adaptability for a variety of uses, includes electrochemical devices for storing energy, electrocatalysis, sensors, applications in medicine, membranes, flexible and portable devices, etc. Among the many varieties of electrode materials for electrochemical energy storage devices, MXenes, a new class of sophisticated functional 2D nanomaterials, have evolved over the past ten years. In the area of functional materials, MXene and its composites have created an intriguing new prospect. Materials, due to their distinctive layers of transition metal nitrides, carbides, and carbonitride structures, greater charge carrier mobility, greater thermal and electrical conductivity, and high negative Zeta-potential, excellent hydrophilicity, tunable bandgap, high mechanical characteristics, and metallic nature the number of metal active redox sites on the surface is increased by rich surface chemistry, and rapid diffusion of ions. So, due to its unique properties and characteristic features MXene was synthesized in this study. Then composites of Mn/Ce/NGO-MXene were prepared via Green synthesis route by using orange peel extract. Three samples were prepared and quantity of MXene was kept as 50mg/100mg/150mg in the samples. The structure and morphology was confirmed by using XRD and SEM. The average crystallite size was obtained as 43 nm. The electrochemical analysis of these electrode materials executed that composites having greater quantity of MXene shows high specific capacitance of 608 F/g.