

Electrochemical Performance of Al-Mn₂O₃ Based Electrode Materials

Authors : Noor Ul Ain Bhatti, M. Junaid Khan, Javed Ahmad, Murtaza Saleem, Shahid M. Ramay, Saadat A. Siddiqi

Abstract : Manganese oxide is being recently used as electrode material for rechargeable batteries. In this study, Al incorporated Mn₂O₃ compositions were synthesized to study the effect of Al doping on electrochemical performance of host material. Structural studies were carried out using X-ray diffraction analysis to confirm the phase stability and explore the lattice parameters, crystallite size, lattice strain, density and cell volume. Morphology and composition were analyzed using field emission scanning electron microscope and energy dispersive X-ray spectroscopy, respectively. Dynamic light scattering analysis was performed to observe the average particle size of the compositions. FTIR measurements exhibit the O-Al-O and O-Mn-O and Al-O bonding and with increasing the concentration of Al, the vibrational peaks of Mn-O become sharper. An enhanced electrochemical performance was observed in compositions with higher Al content.

Keywords : Mn₂O₃, electrode materials, energy storage and conversion, electrochemical performance

Conference Title : ICEMRE 2017 : International Conference on Energy Management and Renewable Energy

Conference Location : Jeddah, Saudi Arabia

Conference Dates : January 30-31, 2017