Fabrication of 1-D Molybdenum Disulfide for Energy Storage Application

이고운†, 명광식, 권지희, 박기배, 김예진, Maja Remskar[1], 김해진[2]
KIER; [1]JSI; [2]KBSI
(e.gowoon@kier.re.kr†)

Here, we present a method for the facile synthesis of lithium-ion battery anode material based on MoS2 nanotubes. Molybdenum disulfide has a layered structure, resulting in the formation of two-dimensional layers by stacking together through weak van der Waals interactions. The weak interlayer interaction allows foreign ions or molecules to be introduced between the layers through intercalation. Thus, we developed a MoS2 nanotube material, showing the characteristic on the intercalation host to form a promising electrode material in high energy density batteries. The products are characterized by X-ray diffraction, transmission electron microscopy and N2 adsorption analysis techniques. The results show that the MoS2 have high reversible capacities. In addition, we present experimental results showing how a hybrid structure comprising of carbon nanomaterials in a MoS2 nanotubes can be used to enhance conductivity in energy storage applications. With this hybrid technique we demonstrate the high-power lithium ion batteries to the success of electric, hybrid electric vehicles and next generation electronic devices.