

Electrospun calcium doped lithium titanate nanofibers as anode materials for high-performance lithium-ion batteries

배재진, 윤원근, 한현수, 노유성, 안현우, 김원배†
포항공과대학교
(kimwb@postech.ac.kr†)

With widespread use of electronic devices, electric vehicle (EV), and energy storage system (ESS), the interest of high-performance battery have increased. Lithium titanate (LTO) is one of anode material to alternate conventional graphite owing to its safety, high power density, and rate capability. Calcium doped 1-D lithium titanate nanofiber (CaLTONF) is synthesized by using electrospinning method. X-ray diffraction (XRD) and Scanning electron microscopy (SEM) shows successful doping of calcium into LTO lattice and electrospun nanofiber structure, respectively. The CaLTONF shows high capacity of 210 mAh/g at 1 C, which is higher than undoped LTO nanofiber. The enhanced electrochemical performance is attributed by doped Ca ion in LTO structure which can facile Li-ion diffusion and improve the electronic conductivity by changing the charge valence of Ti.