

## Synthesis of urchin-like $\text{MnO}_2$ and its composites as lithium-ion battery anodes

류 적, 최원목<sup>1,†</sup>

울산대학교; <sup>1</sup>울산대학교 화학공학부

(wmchoi98@ulsan.ac.kr<sup>†</sup>)

In this work, we synthesized urchin-like  $\text{MnO}_2$  particles and its composite with CNF(carbon nanofiber) for the anode electrode of Li-battery. We prepared the novel urchin-like- $\text{MnO}_2$  (U- $\text{MnO}_2$ ) which was composed of tube shape through a conventional hydrothermal route and then prepared the composites by impregnation method. The samples are systematically investigated by X-ray diffraction analysis, Raman spectroscopy, FT-IR spectroscopy, field-emission scanning electron microscopy and EDS-mapping. The electrochemical measurement of lithium-ion batteries (LIBs) shows that prepared U- $\text{MnO}_2$ -CNF as the anode exhibit high discharge capacity, high rate capability, and excellent cycling stability.