

## Fabrication of $\text{TiO}_2/\text{SiO}_2$ encapsulated active materials for the safe lithium ion batteries

박상은, 이상화<sup>1</sup>, 이중기\*  
한국과학기술연구원; <sup>1</sup>경원대학교  
(jklee@kist.re.kr\*)

The application of lithium rechargeable batteries to such power storage devices increases concern about battery safety. Active material for lithium ion batteries was encapsulated with  $\text{TiO}_2$  and  $\text{SiO}_2$  layer via a sol-gel reaction with titanium and silicon alkoxides and, followed by a thermal treatment process. The pore size distribution of  $\text{TiO}_2$  and  $\text{SiO}_2$  layer was controlled by the variation of precursor and catalyst, which affected the electrochemical performance of active material. The electrochemical and structural properties of nanocomposites with different surface areas of encapsulating  $\text{TiO}_2$  and  $\text{SiO}_2$  layer were characterized by X-ray diffraction (XRD), the nitrogen gas adsorption analysis by the Brunauer-Emmett-Teller (BET) equation, transmission electron microscope (TEM), and galvanostatic charge-discharge experiments.