

Study on the Electrochemical Characteristics of  
 Lithium Sulfur Batteries with Protected Li Anodes  
 보호막을 입힌 리튬 음극을 기초로 한  
 리튬 유황 전지의 전기화학적 특성에 관한 연구

이용민 · 최남순 · 박정화 · 박정기  
 한국과학기술원 생명화학공학과

The protection layer on the Li anode was introduced to enhance the charge/discharge performance of lithium sulfur batteries by crosslinking reaction of the curable monomer in the presence of liquid electrolyte and photoinitiator. The protection layer reduced the growth of SEI layer and suppressed the reaction between Li and soluble polysulfide to prevent overcharge phenomena. The charge/discharge performance of the unit cells with the protected Li anodes was investigated with different electrolytes, liquid electrolyte and plasticized polymer electrolyte. The unit cells with liquid electrolytes showed the averaged discharge capacity, 270 mAh/g-cathode, which was twice as high as that of lithium ion battery within 100 cycles. Therefore, the cell with protected Li anode/liquid electrolyte/S cathode is recommended as a good candidate for lithium/sulfur batteries. All the charge/discharge tests were operated at room temperature.

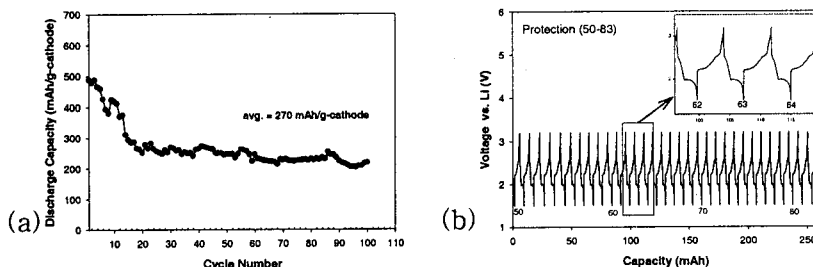


Figure (a) discharge capacities of protected **Li/liquid electrolyte/S** unit cell as a function of cycle number (b) charge/discharge profiles at a constant current density(C/10) and 20 °C with 1.5V cut-off