

### Characteristics of the $V_2O_5$ cathode powders prepared by spray pyrolysis

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Much attentions has been focused on vanadium pentoxide ( $V_2O_5$ ) as cathode materials due to its high theoretical capacity of which reaches  $440 \text{ mAhg}^{-1}$  when three lithium ions are intercalated per mole of  $V_2O_5$ . However, the practical application of  $V_2O_5$  as cathode is restricted by the dissolution of vanadium into the electrolyte which leads to the rapid capacity fading on cycling. Reducing the specific surface area of the cathode powders are efficient way of decreasing of dissolution of vanadium because of the active material-electrolyte interface area is reduced. Spray pyrolysis is proper to the preparation of cathode powders with a fine size, non-aggregated, spherical and dense morphology. In this study,  $V_2O_5$  cathode materials were directly prepared by spray pyrolysis at various preparation temperatures. The effects of the preparation temperatures on the morphology, surface area and electrochemical properties of the  $V_2O_5$  powders were investigated.