

Study on Factors Affecting Electrochemical Performance of Organic/ V_2O_5 Hybrid Cathode Materials

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In recent years, inorganic-organic hybrid materials have been considerable attention because of the prospect of developing materials with unique chemical and physical properties. Inorganic-organic hybridization is capable of leading to novel materials with both organic and inorganic characteristics. Recently, such advanced materials have been applied to electrode materials in rechargeable lithium battery. Improved capacity for lithium intercalation has been observed for the polyaniline(Pani)/ V_2O_5 system.¹ Actually, improvement was achieved by oxygen post-treatment at temperature below 100 °C for less than 5 h, which indicates that several factors may have a significant influence on the capacity of the polyaniline-intercalated V_2O_5 . In this paper, we have investigated factors affecting electrochemical performance of organic/ V_2O_5 hybrid cathode materials using a nonaqueous electrolyte cells. For this purpose, we compared systematically the electrochemical lithium insertion characteristics of the Pani intercalated- V_2O_5 compounds as follows: comparison of samples with different Pani concentration, comparison of as-prepared samples and oxygen post-treated samples, and comparison of samples with different heat-treatment temperature and time. The detailed results will be presented.

References

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