

어노다이징 템플레이트법을 이용한 에너지소재의 제조

Preparation of Energy Material Using the AAO Template Method

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Abstract: Aluminum anodizing is a technique that can be formed pores well aligned various diameters. We were prepared CNFs using the polymer as carbon source using the AAO as a template. CNFs can be heat treated at 1400°C and became soft carbon. It showed electrochemical behavior by Crystallization. In this experiment, I was observing the behavior as a anode material for LIC of CNFs having different diameters.

1. Introduction

Aluminum anodizing techniques can be used to form a well-aligned pores. Diameter of the AAO template is determined by the voltage. In addition, the voltage range indicating stability anodizing reaction to the acid electrolyte to be used have been reported. the target of this study is preparation of Having a uniform diameter CNFs as a anode material of LIC.

2. Main Subject

In this study, Alumina template was anodized in oxalic acid (40V) and in phosphate (150V). The diameter of the AAO pores, 80nm in oxalic AAO template condition and, 230nm in phosphoric AAO template condition.. As a result of producing a CNF using them as a template, CNF was confirmed to have the same size as the pore size of the AAO.(Fig.1). CNF was heat-treated at 1400°C. We have discussed the effect of diameter change of CNFs on the electrochemical properties as an anode material in LICs and EDLC. Surface morphology of AAO templates and prepared CNFs were investigated by scanning electron microscopy (SEM). Electrochemical properties were evaluated that cyclic voltammety (CV), charge-discharge test and impedance.

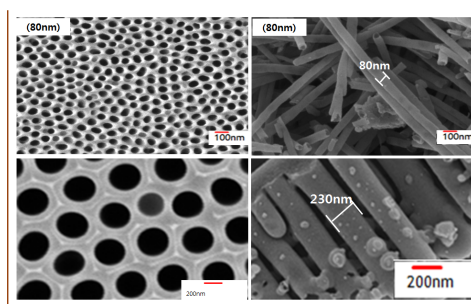


Fig. 1. The SEM Images of AAO(left) and CNFs(right)

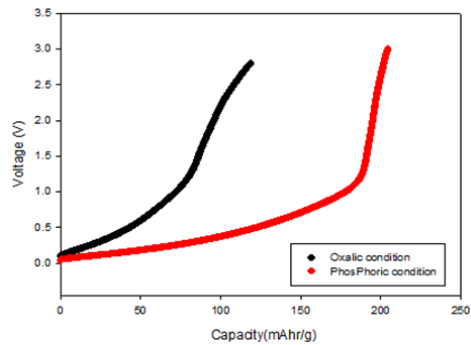


Fig. 2. Charge-discharge test of CNFs electrodes.

3. Conclusion

CNF was Crystallized by heat treatment. it showed the lithium intercalation capacity is improved due to the increase in crystallinity. As a result of comparing the CNF of different diameters, it was confirmed a tendency also increases capacity according to the increase in the diameter of CNF. (Fig.2)

Referance

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