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Electrochemical Characteristics of Pseudocapacitor using Aqueous Polymeric Gel Electrolyte

수용성 고분자 젤 전해질을 사용한
슈도커패시터의 전기화학적 특성

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We have reported to make nanostructured cobalt oxide electrode that have large capacitance over than 400F/g (specific capacitance) and good cycleability[1]. But, It had serious demerits of low voltage range under 0.5V and low power density. Therefore, we need to increase voltage range of cobalt oxide electrode. we report here on the electrochemical properties of sol-gel-derived nanoparticulate cobalt xerogel in 1M KOH solution and aqueous polymeric gel electrolyte. In solution electrolyte, cobalt oxide electrode had over than 250F/g capacitance consisted of EDLC and pseudocapacitance. In gel electrolyte, cobalt oxide electrode had around 100F/g capacitance. This capacitance was only surface EDLC. In solution electrolyte, potassium ion as working ion reacted with both of layers easily. However, In gel electrolyte, reacted with only surface-active layer. Its very hard to reach resistive layer. So, we have studied on pretreatment of electrode to contain working ions easily. We'll report more details.

<Reference>

1) 김한주, 신달우, 김용철, 김성호, 박수길, J. of the Korean Electrochemical Society, Vol. 3, No. 3, 146 (2000)