

The Effect of Endless Activation on the Specific Characteristics of Nanoporous carbon Materials for Supercapacitors

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The important factors, that to determined use nanoporous carbon as component electrodes of supercapacitors (SC) is high specific capacity material and high electrical conductivity.

The effort to improve the specific capacity of nanoporous carbon by on-stage technology activation at high temperature was led.

The base material was feedstock of plant origin, which was subjected to carbonization at 650 °C for 1 hour herein after. Then carbonated material was placed in an water solution of 30% KOH in 1:1 ratio. After that was on-stage process activation. Activation of the received carbon material was carried out in 3 stages.

In the first stage of activation carbonated material was mixed with 30% KOH water solution and was subjected to thermal treatment at 850 °C with constant vacuum pumping ($1-2 \cdot 10^{-1}$ mmHg) during 40 minutes.

As can be seen from the figure, on the current-voltage characteristics of the SC is not observed wale-like emission, that indicating a lack of electrode material impurities, and no peaks as in positive and in negative polarization indicates that in the SC during the charge-discharge does not occur Faraday's processes.

The three-time activation in an alkaline medium leads to increase of capacity by 35-40% was established.

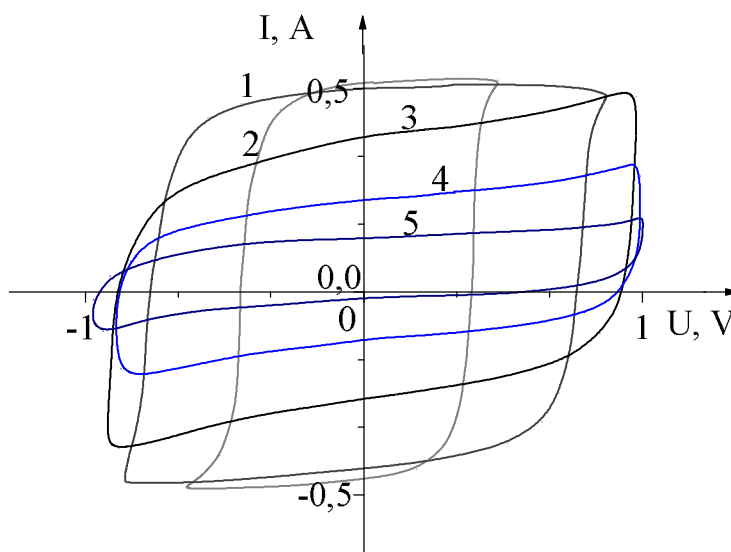


Fig. Cyclic I-V of activated carbon electrodes at: 1 – 2 mV/s; 2 – 5 mV/s; 3 – 10 mV/s; 4 – 20 mV/s; 5 – 50 mV/s.

1. Kovalyuk Z.D., Yurtsenyuk S.P., Buharov V.A., Savchuk A.I. New electrode materials for supercapacitors//E-MRS IUMRS ICEM 2006 Spring Meeting (Nice, France). – 2006.