

**EDLC Performances of the Electrodes from
Electrospun Pitch-Based ACFs**

전기방사로부터 제조된 피치계 활성 탄소섬유의 EDLC 전극 특성

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The electrospinning technology produces non-woven web consisting of polymeric fibers with diameters down to hundreds nanometers. Therefore, the ACF webs from the electrospun fibers have advantages for easier handling, the enhancement in the specific density in adsorption due to the high density of the contact points, and the low cost in applications to electrodes .

Especially, pitch-based electrospun CFs/ACFs exhibit many advantages such as low cost, high carbon yield, and excellent performance in conductivities than the others. However, pitch precursor with high softening point (above 250°C) has problem to overcome. That is to find the proper solvent because rare solvent dissolves the pitch to be high enough concentration.

In this work, electrical double layer capacitor (EDLC) performances were tested on the basis of the electrodes prepared from pitch-based ACF webs activated at various temperatures.

Isotropic pitch solution was electrospun to be ultra-fine fibers. The fibers were activated in two processes i.e., activated after stabilization (SAF) and activated after carbonization (CAF). The activation processes affected to the activation behaviors and electrochemical properties of the electrodes formed. The specific surface area and the electrical conductivity were larger for CAF than for SAF. The highest specific capacitance among the experimental range was 123 F/g and the value was almost sustained at high current of 1000 mA/g. The results represented a rapid dissipation and rapid build-up of the charges in the highly conductive electrodes in comparison with electrodes of low conductivity.