

Activated carbon nanofiber electrode prepared by electrospinning of acetic acid-added PAN solution

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The activated carbon fiber (ACNF) were prepared through three steps of heat treatment the web-type fibers, which are obtained by electrospinning acetic acid-added PAN in DMF solution. The stabilization was executed at 280°C in air, the carbonization was carried with at 800°C for 2 hr in nitrogen, and then activation was executed at 30 vol.% steam for 1 hr in nitrogen. The diameter of ACNFs and the meso pore surface area increased as the amount of acetic acid increased. For the addition of 20 wt.% acetic acid, the specific capacitance was increased to approximately 60 % as compared with pure PAN. The improvement of electrochemical performance was originated from the increase of meso pore surface area and electric conductivity. The diameter of ACNFs were determined by Scanning electron microscopy (SEM). The surface area of the ACNFs were determined using Brunauer, Emmett, Teller (BET) method and Barrett, Joyner, Halenda (BJH) method (BELSORP-mini II, BEL, Japan). The characteristics of electrochemical were measured by cyclic voltammograms (CV).