

Electrospun Ultrafine Carbon Fiber Webs for Electrochemical Capacitive Desalination

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The CDI configuration is illustrated in Figure 1. A CDI cell consists of two parallel electrode plates separated by a 1.0 mm gap for solution flow. A sodium chloride aqueous solution was pumped into the bottom and exited from the top of the cell by a peristaltic pump with a flow rate of 6 mL/min. The voltage used in these experiments was 1.2 V. The CDI was performed in the batch mode. The solution conductivity was on-line monitored with 5 second interval by a conductivity meter (type 308A, Leici Company).

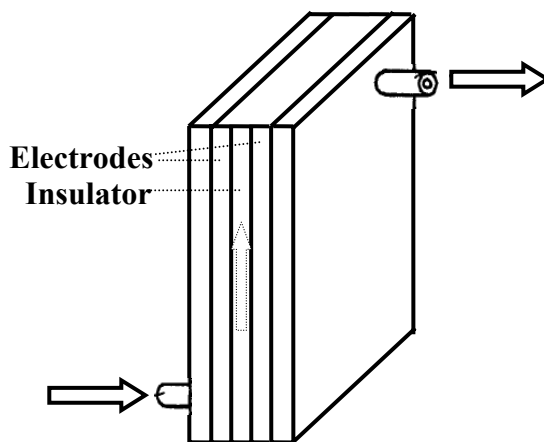


Fig. 1 Schematic of the CDI configuration with ACFs as the electrodes.

Figure 2 shows the SEM image of ACF with a smooth surface and a fiber diameter of ca. 18 μm . Figure 3 shows the isotherm of nitrogen adsorption/desorption for the ACF. The sample exhibits type I isotherm, which are the typical adsorption characteristics of microporous materials. The calculated BET surface area of ACF is 670 m^2/g . Figure 4 shows the SEM morphology of HNO_3 purified multi-walled carbon nanotubes with an average diameter of 17 nm. The specific surface area of

activated carbon is $730 \text{ m}^2/\text{g}$ according to the nitrogen adsorption/desorption measurement.

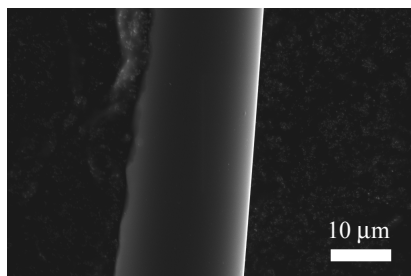


Fig. 2 The SEM image of ACF

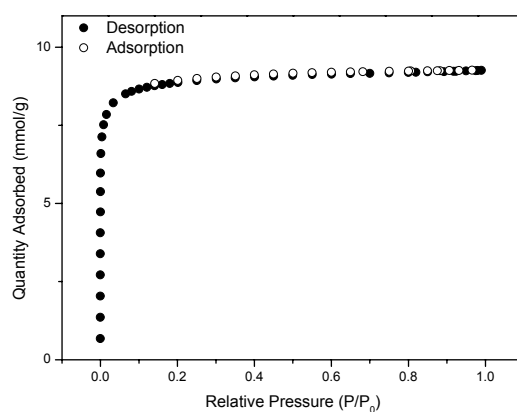


Fig. 3 The isotherm of nitrogen adsorption/desorption for the ACF.

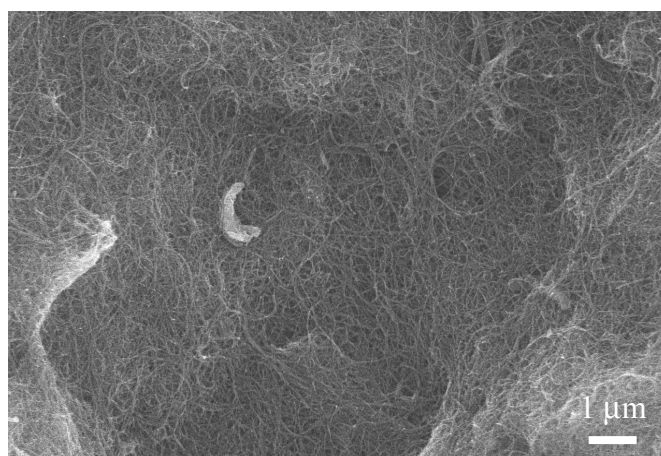


Fig. 4 SEM morphology of multi-walled carbon nanotubes.