

Porous Carbon Materials Used for Supercapacitors

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Abstract: Specific capacitance of supercapacitors is contributed by both double-layer capacitance and pseudocapacitance. Porous carbon materials have attracted much attention owing to their high specific surface area, which can provide supercapacitors with more double-layer capacitance. Both specific surface area of materials and pore size distribution play an essential role in improving energy storage density of supercapacitors, hence most research focuses on designing a suitable carbon pore structure which contributes most to capacitance. Activation method and template method are the most widely used methods to form pores in a carbon matrix.

In this presentation, different pore formation mechanisms of activated carbons, activated carbon fibers, templated porous carbons, carbon nanotubes and nitrogen-containing porous carbons are discussed along with their application in supercapacitors. Contribution of micropores(<2nm), mesopores(2-50nm) and macropores(>50nm) to the capacitance are also discussed.

Reference

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