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Communication

Surface modification by graphene oxide: An efficient strategy to improve the performance of activated carbon based supercapacitors

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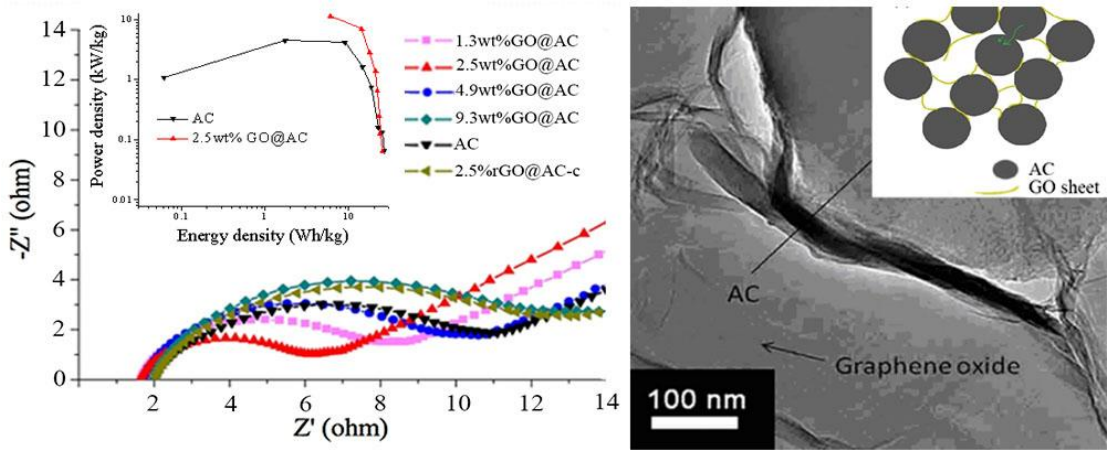
Graphical Abstract



An efficient and cost-effective strategy to modificate the surface of active carbon (AC), form a 3D-conductive network, and therefore improve the electrochemical performance of AC based supercapacitor was developed.

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ABSTRACT

We demonstrate an efficient and cost-effective strategy to improve electrochemical properties of AC based electrode materials. A series of graphene oxide (GO)-modified activated carbon (AC) composites (GO@ACs) have been prepared as electrode materials for supercapacitors (SCs). In GO@ACs, AC particles anchored on the surface of GO sheets which were synchronously reduced during charge/discharge process, and formed a 3D-conductive network. Electrochemical analyses revealed that 2.5 wt%GO@AC, which exhibited improved electrical conductivity and high specific capacitance at large current density in organic electrolyte, is a promising electrode material for high-performance SCs. At 6 A/g, the specific capacitance of 2.5wt%GO@AC increased by 249.5% in comparison with that of AC.

Efficient and environmental friendly energy-storage systems are necessary to meet the growing demand for sustainable and renewable power sources. Among various energy-storage sources, supercapacitors (SCs) with high

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