Hydrothermal Synthesis and Electrochemical Properties of N-doped Activated Carbon Microspheres

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N-doped carbon microspheres were fabricated from glucose using g-C₃N₄ quantum dots as the nitrogen source under hydrothermal conditions. The carbon microspheres were found remarkably enlarged from 0.4 μm to 5.0 μm after the addition of the quantum dots. Adjustable nitrogen content in the form of pyridinic (N-6) or pyrrolic or pyridone (N-5) was introduced into the carbon microspheres up to 6.48 %. The surface areas of the activated carbon microspheres are comparable to those of the un-doped smaller ones. Electrochemical analysis indicates that nitrogen doping leads to both enhanced conductivity and enhanced specific capacitance up to 281 F/g at 2 A/g.

Keywords: activated carbon microspheres, hydrothermal synthesis, glucose, g-C₃N₄, specific capacitance.

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