

Solventless, one-step fabrication of Fe₃O₄@C core-shell and its superior performance of supercapacitor

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In a kind of electrochemical energy storage device, supercapacitors have recently been spotlighted as a power source in applications requiring high power outputs such as regenerative braking in electric vehicles because of good stability, fast charging/discharging rate, prominently high power density, and low equivalent series resistance.

In this report, a hybrid supercapacitor that consists of carbon coated Fe₃O₄ particles are fabricated in facile and one-step process, which means there are no additional steps for purification, drying or calcination. On top of that, it has superior supercapacitive behaviors. Even at 300 mV/s in cyclic voltammetry test, its capacitance is higher than 100 F/g and its retention is prominent that capacitances before and after 2000 cycles in cyclic voltammetry test are almost the same. Considering its simple fabrication method and its significant performance, it can have a potential as a promising supercapacitor.

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