One-step synthesis of nitrogen, sulphur-codoped graphene as electrode material for supercapacitor with excellent cycling stability

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Doping of carbon-based materials with heteroatoms is an efficient method to increase their electrocatalytic activities. In the present study, a one-step solvothermal method to prepare nitrogen and sulfur co-doped graphene (NSG) using thiourea and graphene oxide (GO) as raw materials, has been reported. For supercapacitor applications, NSG exhibited higher capacitive properties compared to undoped graphene (UG). The as-fabricated material displayed superior gravimetric specific capacitance of 176.5 F/g at 1.0 A/g and also showed outstanding long-term cyclic stability (95.0% capacitive retention after 10000 cycles).

Keywords: nitrogen and sulfur co-doped graphene (NSG), supercapacitor, electrode material

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