A Facile Synthesis of ZnO Nanorods on Nitrogen-Doped Graphene Sheets for Supercapacitor Applications

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ZnO nanorods/nitrogen-doped graphene (ZnO@NG) composite networks were prepared by a convenient hydrothermal method from zinc acetate and graphene oxide (GO) using ethylene glycol as the reducing agent. ZnO nanorods were observed to be homogeneously supported on the NG networks with a length and diameter of 1–2 μm and 50–100 nm, respectively. High specific capacity (237.18 F/g, 0.5 A/g) can be obtained by integrating porous NG networks and ZnO nanorods as ultracapacitance electrodes. ZnO@NG also exhibits an excellent electrochemical stability of 90.8% for 2000 cycles at 0.5 A/g. In this study, a new method is proposed for the preparation of heteroatom-doped graphene and metal oxide composite for high-performance supercapacitors.

Keywords: nitrogen-doped graphene (NG), ZnO@NG, supercapacitor, solvothermal method

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