

Fabrication of hollow graphene/polyaniline hybrid balls for the supercapacitor applications

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Highly macroporous structure of the reduced graphene oxide/polyaniline (rGO/PANI) hybrid was fabricated using poly(methyl methacrylat) (PMMA) colloidal particles as a template, followed by in situ polymerization of polyaniline. Inheriting from novel structure, rGO/PANI hybrids enormously enhance the electrochemical behavior, the specific capacitance and cycling performance of supercapacitors. The specific capacitance of rGO/PANI hybrids can reach 331 F g⁻¹ at a current density of 1 A g⁻¹. The rGO/PANI hybrids also show good cycling stability with 14% lost of the capacitance after 500 charging/discharging cycles at a current density of 1 A. When applying this electrode material for flexible solid-state supercapacitors (FSSS), it exhibits high specific capacitance and good cycle life. This study proves the exciting potential of highly macroporous structure hybrid materials for FSSS.