**ABSTRACT**

The high capacity, excellent cyclability, and good rate capability of reduced graphene oxide (rGO) anchored with Bi2O3 nanocomposite for sodium‐ion batteries is reported. A simple reduction method is adapted to deposit spherical Bi2O3 nanoparticles on the surface of rGO sheets. The surfactant cetyltrimethylammonium bromide (CTAB) plays a major role in controlling the morphology of the Bi2O3 nanoparticles. This Bi2O3@rGO nanocomposite has the advantages of high reversible capacity with a capacity retention (at high rate) of 70.2 % after 200 cycles at a current density of 350 mA g−1. This superior performance can be attributed to the fact that rGO sheets hamper the volume expansion of Bi2O3 nanoparticles and result in faster diffusion of Na+ ions (diffusion coefficient: 5.12×10−8 cm2 s−1) and smaller internal resistance (84.17 Ω) compared with pristine Bi2O3 nanoparticles. The results suggest that anchoring rGO sheets with metal oxides is one of the simplest ways to enhance the electrochemical performance of sodium‐ion batteries.