

Advanced Nanostructured Electrode Materials for Lithium-ion Batteries

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Highly porous magnesium ferrite hollow spheres are fabricated by a hydrothermal reaction of a composite solution containing magnesium, iron ions, and sucrose giving rise to MFO/FO-glycolate/carbon microspheres, and subsequently carbon decomposition through thermal process resulting in hollow microspheres

The MFO/FO-HS microspheres with calcination temperatures were differently synthesized via the combined mechanism of both inward and outward Ostwald ripening, which consist of their outer shell, inner shell, void space between outer shell and inner one, and hollow inner core. The improved rate capability for MFO/FO-450HS calcined at 450 oC was easily identified with the exceptionally high discharge capacity, which was maintained at 1280 mAh/g without fading, even after 100 cycles. The MgO/MoO₃-HS hollow microspheres with proper calcination temperature were synthesized via the outward Ostwald ripening, which consist of a single shell and hollow inner core as a large void.