

عنوان مقاله:

Tetrabutylammonium Perchlorate electrolyte on electrochemical properties of spinel $MgCo_2O_4$ nanoparticles

محل انتشار:

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خلاصه مقاله:

Spinel magnesium Cobaltite ($MgCo_2O_4$) nanoparticles with a crystalline size in the range of ~ 16 nm were prepared by a simple co-precipitation technique with NaOH as a precipitant. The formation of spinel $MgCo_2O_4$ phase was confirmed by X-ray diffraction (XRD) pattern. Scanning electron microscope (SEM) images showed that aggregated nanoplates. The electrochemical performance of modified $MgCo_2O_4$ electrodes was investigated with 2M of tetrabutylammonium perchlorate (TBA) electrolyte. The cyclic voltammetry (CV) results revealed that the $MgCo_2O_4$ electrode reached the highest specific capacitance of 390 $^{\circ}F/g$ at a scan rate of 5 mV/s. The excellent electrochemical performance was absorbed due to the electrochemical faradaic redox reactions related to the intercalation/de-intercalation of the tetrabutylammonium cation (TBA^+) and $MgCo_2O_4$ lattice, and brings an additional pseudocapacitive contribution. The present work proves that the prepared magnesium cobaltite can serve as advanced electrode material for next generation organic electrolyte supercapacitors.

کلمات کلیدی:

Electrode, Electrolyte, Magnesium Cobaltite, Specific Capacitance, Supercapacitor

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