

Free standing hierarchical mesoporous spinel oxides for high performance electrochemical storage

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Consideration of new electrode materials with high capacity is one of the most important research direction in electrochemical energy storage systems (ESSs). Transition metal oxides with stoichiometric or even non-stoichiometric compositions, with a structure defined as the spinel structure (denoted as $A_xB_{3-x}O_4$ (A, B = Co, Zn, Ni, Fe, Cu, Mn, etc.)), have recently attracted great interest due to their low cost, easy synthesis, high electrochemical activity and stability, and easy control of morphologies. In the present study hierarchical mesoporous spinel oxides deposited directly on conducting substrate by hydrothermal method. Porous nanoarchitectures can offer a large number of electrochemically active sites and, at the same time, facilitate transport of charge carriers (electrons and ions) during energy storage reactions. Superior electrochemical performance of spinel oxides materials, evinces its ability to become promising candidates as an electrode material for ESSs. This work was supported by the National Research Foundation of Korea (NRF) funded by the Ministry of Science, ICT and Future Planning (NRF-2016R1C1B2008694) and the Ministry of Education (No. 2009-0093816).