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Impedance and self-discharge mechanism studies of nickel metal hydride batteries for energy storage applications WENHUA ZHU, Center for Microfibrous Materials, Auburn University, YING ZHU, Chemical Engineering Department, Auburn University, BRUCE TATARCHUK[1], Center for Microfibrous Materials, Auburn University — Nickel metal hydride battery packs have been found wide applications in the HEVs (hybrid electric vehicles) through the on-board rapid energy conservation and efficient storage to decrease the fossil fuel consumption rate and reduce CO_2 emissions as well as other harmful exhaust gases. In comparison to the conventional Ni-Cd battery, the Ni-MH battery exhibits a relatively higher self-discharge rate. In general, there are quite a few factors that speed up the self-discharge of the electrodes in the sealed nickel metal hydride batteries. This disadvantage eventually reduces the overall efficiency of the energy conversion and storage system. In this work, ac impedance data were collected from the nickel metal hydride batteries. The self-discharge mechanism and battery capacity degradation were analyzed and discussed for further performance improvement.

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