Simplified Models for Pseudocapacitance and Capacitance of the Supercapacitors

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Abstract

Supercapacitors are electrical double layer capacitors (EDLC) that have an unusually high energy density when compared to conventional capacitors. However, when they are compared to usual batteries, even if their energy density is about ten times lower, supercapacitors offer new alternatives for applications where energy storage is needed. The functionality of these devices beside the batteries and common capacitors is briefly presented in the first part of this paper and after that we are focused on two important issues related to supercapacitors: modeling the pseudocapacitance and the coverage according to Langmuir and Temkin isotherms, and computing the parameters of a simpified PSpice equivalent electrical model based on charge/discharge measurements.