

Abstract Submitted
for the MAR14 Meeting of
The American Physical Society

Formula of an ideal carbon nanomaterial supercapacitor LARISSA SAMUILOVA, SCCC, NY, ALEXANDER FRENKEL, VLADIMIR SAMUILOV, State University of New York at Stony Brook, USA — Supercapacitors exhibit great potential as high-performance energy sources for a large variety of potential applications, ranging from consumer electronics through wearable optoelectronics to hybrid electric vehicles. We focus on carbon nanomaterials, especially carbon nanotube films, 3-D graphene, graphene oxide due to their high specific surface area, excellent electrical and mechanical properties. We have developed a simple approach to lower the equivalent series resistance by fabricating electrodes of arbitrary thickness using carbon nanotube films and reduced graphene oxide based composites. Besides of the problem of increasing of the capacitance, the minimization of the loss tangent (dissipation factor) is marginal for the future development of the supercapacitors. This means, not only a very well developed surface area of the electrodes, but the role of the good quality of the porous separator and the electrolyte are important. We address these factors as well.

Vladimir Samuilov
State University of New York at Stony Brook, USA

Date submitted: 15 Nov 2013

Electronic form version 1.4