

Abstract Submitted
for the MAR14 Meeting of
The American Physical Society

Roll-to-Roll production of carbon nanotubes based supercapacitors¹ JINGYI ZHU, ANTHONY CHILDRESS, MEHMET KARAKAYA, MARK ROBERTS, MARGARITA ARCILLA-VELEZ, RAMAKRISHNA PODILA, APPARAO RAO, Clemson University — Carbon nanomaterials provide an excellent platform for electrochemical double layer capacitors (EDLCs). However, current industrial methods for producing carbon nanotubes are expensive and thereby increase the costs of energy storage to more than \$10 Wh/kg. In this regard, we developed a facile roll-to-roll production technology for scalable manufacturing of multi-walled carbon nanotubes (MWNTs) with variable density on run-of-the-mill kitchen Al foils. Our method produces MWNTs with diameter (heights) between 50-100 nm (10-100 μm), and a specific capacitance as high as ~ 100 F/g in non-aqueous electrolytes. In this talk, the fundamental challenges involved in EDLC-suitable MWNT growth, roll-to-roll production, and device manufacturing will be discussed along with electrochemical characteristics of roll-to-roll MWNTs.

¹Research supported by NSF CMMI Grant1246800.

Deepika Saini
Clemson University

Date submitted: 15 Nov 2013

Electronic form version 1.4