Abstract Submitted
for the TSF13 Meeting of
The American Physical Society

Electrochemical performance characterization of nanostructured $LiCoO_2$[1] DAVID GARZA, None, KAREN MARTIROSYAN, University of Texas at Brownsville, Department of Physics and Astronomy, Brownsville, TX, 78520, MKHITAR HOBOSYAN, YERKEZHAN MAMYRBAEVA, None — The theoretical capacity of $LiCoO_2$ is 300 mAh/g and practical capacity is significantly lower (150 mAh/g) than theoretical value since concentration polarization occurs within the particle before the entire capacity can be utilized. In general, reducing the particle size of electrode materials in lithium-ion batteries to nano domain level overcome this problem. Nanoscale dimensions will provide a short path for the ion motion in the ionic solid electrodes. Therefore, reactions become faster and batteries can be charged and discharged rapidly. In this report we describe the behaviour features of the electrochemical performance of lithium ion battery electrod material ($LiCoO_2$) produced by Carbon Combustion Synthesis of Oxide (CCSO). The custom-made pouch-type battery was prepared. The battery was assembled in glove box using separator membrane with special type of polyethylene. The charge-discharge cycles were carried out in the potential range of 2.7-4.2 V using 8-channel battery analyser. The specific capacity had initial value of 200 mAh/g and after 30 cycles the capacity dropped to almost 180 mAh/g retaining over 90 % of initial capacity. This result is confirming that CCSO synthesized ultrafine $LiCoO_2$ has stable structure and gives opportunity to extract more than 66 % of theoretical capacitance.

[1]This material is based upon work supported by the National Science Foundation under Grant Number 1156600.

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None

Date submitted: 13 Sep 2013 Electronic form version 1.4