The Use of Various Morphologies of Nanocellulose as Life Long Anodes of Sodium Ion Batteries

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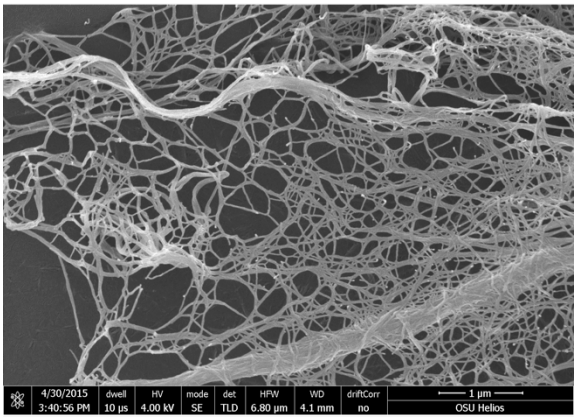
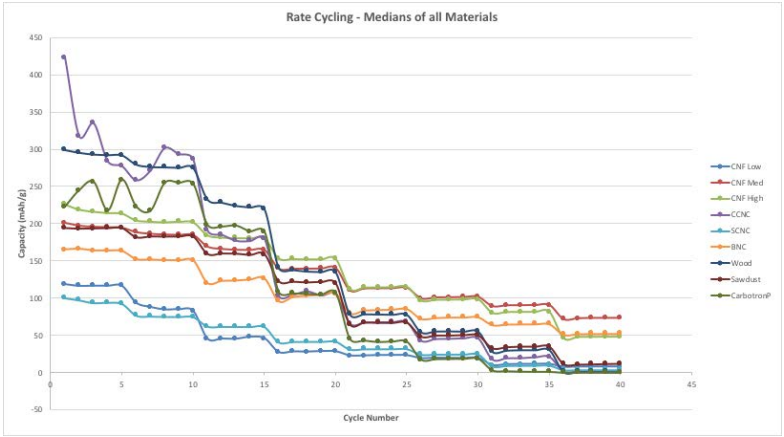
Abstract

Sodium-ion batteries (SIBs) require the use of a highly reversible anode. To form this anode carbon nanofibers and nanocrystals are derived from cellulose nanofibers, cellulose nanocrystals, and bacterial nanocellulose. The primary structure of the cellulose nanofibers is maintained when carbonized allowing for high surface area in the structure. The carbon nanofibers exhibit promising electrochemical properties, including good rate capability (85 mAh/g at 2000 mA/g), and excellent cycling stability (176 mAh/g at 200 mA/g over 600 cycles). The other morphologies show similar capacities and cycling stabilities.





June 8, 2018

12:45 pm, Valley Library - Room 2035

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