

Abstract Submitted
for the MAR16 Meeting of
The American Physical Society

Process Dependence of Cellulose Nanofiber Fabrication DOUG HENDERSON, XIN ZHANG, Department of Materials Science and Engineering, University of Maryland-College Park, MD, YIMIN MAO, NCNR, NIST, Gaithersburg, MD, SOO-HWAN JANG, LIANGBING HU, ROBERT BRIBER, HOWARD WANG, Department of Materials Science and Engineering, University of Maryland-College Park, MD — Cellulose nanofibers (CNF) are the most abundant natural nanomaterial on earth with potential applications in renewable energy, polymer nanocomposites and flexible electronics. CNF can be produced through TEMPO oxidation which separates the hierarchical structure of cellulose fibers into smaller micro- and nanofibers by altering their surface chemistry, inducing a repulsive electrostatic charge on the fibers. This work will examine the structural evolution of CNF during production. Samples were prepared by removing and quenching aliquots during the TEMPO reaction. The fibers were washed, filtered and re-dispersed into D2O for small angle neutron scattering (SANS) measurements. The SANS data was analyzed to track the changes in the CNF structure as a function of reaction time.

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Date submitted: 06 Nov 2015

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