

Abstract Submitted
for the MAR09 Meeting of
The American Physical Society

Processing of Natural Polymer-nanocomposites using Ionic Liquids as “Green Solvents” SAMEER RAHATEKAR, NIST, ASIF RASHEED, FDA, RAHUL JAIN, Georgia Tech, K. KOZIOL, ALAN WINDLE, University of Cambridge, PAUL TRULOVE, US Naval Academy, SATISH KUMAR, Georgia Tech, JEFFREY GILMAN, NIST, NIST COLLABORATION, GEORGIA TECH COLLABORATION, UNIVERSITY OF CAMBRIDGE COLLABORATION — We report fiber spinning of natural polymers such as cellulose and silk using ionic liquids. Ionic liquids can dissolve cellulose and silk and are less hazardous than the traditional solvents used for dissolving cellulose. We use imidazolium based ionic liquids as a common solvent to process natural polymers and carbon nanotubes. Cellulose/carbon nanotubes based fibers are spun using wet spinning process. The rheological, mechanical thermal and electrical properties of the fibers are measured. We also characterize the cellulose nanocomposites fibers using ionic liquids by SEM/TEM, X-ray diffraction, TGA and FTIR analysis. Silk and carbon nanotubes fiber processing is also reported using ionic liquids as common solvent.

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Date submitted: 15 Dec 2008

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