

Imaging Component Distribution in Nanocellulose Composites

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Interest in sourcing reinforcing fibers for polymer composites from rapidly-renewable, natural resources is quickly growing. Of particular interest are nanocellulose-based reinforcements, which are extracted from the complex structural hierarchy of trees, plants, and even some marine creatures or from certain bacteria and fungi [1]. Researchers are exploring use of nanocellulose reinforcements in a wide variety of applications such as dimensionally stable, optically transparent composites for flexible electronics [2] or improved barrier membranes [3].

Appropriate design of these nanocomposites requires an understanding of the interactions of the constituent materials and careful structural control during nanocomposite preparation. Here we present one example of how chemical imaging with the IRENI beamline at SRC can be used in the design of cellulose nanocomposites. Specifically, we investigated how adding nanocellulose affected the spatial distribution of poly(acrylic acid) (PAA) in a poly(vinyl alcohol) - PAA blend.

Acknowledgements

This work was partially funded by Agriculture and Food Research Initiative Grant no. 2011-67009-20056 from the USDA National Institute of Food and Agriculture and by U.S. Forest Service funds dedicated to nanotechnology research. The chemical imaging work was performed with support from NSF (CHE-1112433, and MRI-DMR-0619759), and the Synchrotron Radiation Center, which is supported by NSF (DMR-0537588) and UW-Milwaukee and UW-Madison.

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