

Polymer Seminar

Friday, November 15, 2024

11:15 am Science 1 - Room 1002

Coffee, Tea, and Cookies will be available at 11:00 am



Kenneth Carter

Research & Development

UMass, Amherst

Host: Alex Asandei

Functionalized Nanocellulose: New Approaches for a Highly Sustainable Material

Abstract: Cellulose exists as one of the most abundant biopolymers, and is commonly found in biomass, such as wood and lumber, as well as the major structural component in plant cell walls. When bulk cellulose is broken down via chemical and mechanical processes, nanocellulose can be extracted. There are two main forms of nanocellulose that our group actively explores, cellulose nanocrystals (CNC) and cellulose nanofiber (CNF). An inherently sustainable material, nanocellulose is known to possess impressive material properties, such as high mechanical strength and a high modulus, and is renowned for its solvent and chemical inertness, as well as its barrier properties. The surface hydroxyl moieties on cellulose and nanocellulose have been subject to a wide variety of chemical modifications. I will describe our work with functionalized nanocellulose in three different arenas: (1) semiconductor materials, (2) advanced CO₂ capture materials, and (3) CNC microreactors. The chemistry of this interesting, albeit challenging class of materials will be presented.

Website: [LINK](#).