MSE SEMINAR

November 10, 2017
113 McBryde Hall
3:30 – 4:30 PM
Refreshments at 3:00 PM

Kelly Stinson-Bagby

Graduate Student
Materials Science and Engineering, Virginia Tech

"Conductive Thin Film Coatings Constructed with Ag Nanoparticles Anchored to Cellulose Nanocrystals"

ABSTRACT

Optically transparent, electrically conductive films are essential for many of today's "smart" electronics and aerospace applications. Most of these transparent conductive films are made from doped metal oxides such as indium tin oxide (ITO) and fluorine tin oxide (FTO). An emerging alternative is conductive cellulose nanocrystals (CNCs) coatings. This work focuses on the adsorption and growth mechanisms of silver nanoparticles (NP) on CNCs using the pulsed activation process (PAP) and correlating to the structure properties of the resulting transparent conductive, conformal coating. Key to this is obtaining an understanding of the interfacial mechanisms of the CNC with the NP and the resulting structure-property relationships with the conformal film.

BIOSKETCH

Kelly is a mid-career returning graduate student. She holds Bachelor's and Master's degrees in Materials Science and Engineering from Virginia Tech. Following her degrees, Kelly worked in industry for 10 years. She was a Research Engineer and PI for several small businesses focused on applications and packaging for fiber optic sensors. She then moved into manufacturing as a Product Transition Engineer and R&D Project Manager developing analog and digital image intensification for the low light visible and reflected-IR wavelength ranges. Kelly has also been adjunct faculty at Virginia Tech for the undergraduate Green Engineering program. She is distinguished as the first undergraduate to earn the Green Engineering concentration at Virginia Tech. Kelly is currently pursuing a PhD in Dr. Johan Foster's research group with the incorporation of Green Engineering with Dr. Sean McGinnis. Her current work focuses on the adsorption of metallic nanoparticles to the surface of cellulose nanocrystals for conductive film applications. Kelly currently lives in Roanoke, VA with her husband and daughter.