Riddhi Shah received 1st place poster award at UTK Women in STEM symposium

Riddhi Shah, a University of Tennessee graduate student, was awarded 1st Poster Prize at the 4th Annual Women in STEM Research Symposium held at University of Tennessee, Knoxville, TN on March 1, 2018.

**Poster Topic:** “Insights into hemicellulose-cellulose interactions from thermochemical pretreatment of model composite materials”

**Scientific Achievement**

Structural analysis, using Small Angle Neutron Scattering (SANS) and X-ray diffraction (XRD), of model hemicellulose – cellulose composites highlighted differences in cellulose coalescence during dilute acid pretreatment. These differences could be related to how xyloglucan (XG) and glucomannan (GM) interact with the growing cellulose network.

**Significance and Impact**

Our data show that XG interacts directly with the cellulose microfibrils as they are formed while GM most likely interacts only at the surface of the macrofibrils. This study provides insight into cellulose-hemicellulose interactions that may help in studies related to understanding accessibility to enzymes for biofuels, developing cellulosic bioproducts, and engineering plants with increased digestibility.

**Research Details**

Deuterating cellulose (produced from *Gluconacetobacter* sp.) enabled us to directly measure the structural changes in cellulose during pretreatment.

Model hemicellulose-cellulose composites were prepared by synthesizing bacterial cellulose in presence of XG or GM dissolved in growth media.