



Necla Mine Eren received a B.S. degree in Food Engineering from Ankara University, Turkey in 2009. She worked for Sakarya University, Turkey as a research assistant for 10 months. Necla came to Purdue in 2010 as a M.S. student with a scholarship from Ministry of National Education, Republic of Turkey. She is working with Dr. Campanella on physicochemical characterization of biological polymers that are subjected to mechanical degradation.

Agricultural & Biological ENGINEERING

Thesis Defense

Speaker: Necla Mine Eren

Title: Physicochemical Characterization Of Mechanically Modified Xanthan Gum Solutions

Major Professor(s): Osvaldo Campanella

Date: Tuesday, April 17, 2012

Time: 9:00 am

Location: ABE 301

Abstract:

Mechanical modification of xanthan gum through application of high shear conditions was investigated in order to understand the reason underlying physicochemical changes of hydrocolloid solutions after they were subjected to dynamic high pressure conditions. Results showed that samples had a decreased viscosity and elasticity upon the treatment compared to the control. Decrease in viscosity and viscoelasticity was attributed to the increased maximum packing of system by wider distribution of the molecular weight of the treated samples that are measured by SEC-MALS. Not only stress relaxation curves that changes from viscoelastic behavior to liquid behavior but also increased sensitivity of viscoelasticity to temperature indicates the loss of structured network with the shear treatment. In addition to rheology, Circular Dichroism spectra of treated samples supported the less structured and more disordered network upon high pressure homogenization.

Application:

Results of present study demonstrate a new way of modifying XG solution properties and are deemed to be helpful in developing value added functional foods.