



Canadian Association
of Physicists

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Contribution ID: 3215 Type: **Oral Competition (Graduate Student) / Compétition orale (Étudiant(e) du 2e ou 3e cycle)**

(G*) Changes to the Stiffness and Compressibility of Soft Phytoglycogen Nanoparticles Through Acid Hydrolysis

Monday 6 June 2022 14:30 (15 minutes)

Phytoglycogen (PG) is a glucose-based polymer that is naturally produced by sweet corn in the form of compact nanoparticles with an underlying dendritic architecture. Their deformability and porous structure combined with their non-toxicity and digestibility make them ideal for applications in personal care, nutrition and biomedicine. PG nanoparticles can be modified using chemical procedures such as acid hydrolysis, which reduces both the size and density of the particles. We used atomic force microscopy (AFM) force spectroscopy to collect high resolution maps of the Young's modulus E of acid hydrolyzed PG nanoparticles in water, and we compare these results to those obtained on native PG nanoparticles. [1] Acid hydrolysis produced distinctive changes to the particle morphology and significant decreases in E . These measurements highlight the tunability of the physical properties of PG nanoparticles using simple chemical modifications.

1. B. Baylis et al., *Biomacromolecules* 2021, 22, 2985.

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