



Canadian Association
of Physicists

Association canadienne
des physiciens et physiciennes

Contribution ID: 2083 Type: **Poster Competition (Graduate Student) / Compétition affiche (Étudiant(e) 2e ou 3e cycle)**

POS-54 Morphological changes of collagen fibrils adsorbed to a strained elastic substrate

Tuesday 12 June 2018 18:20 (2 minutes)

We have previously demonstrated that the mechanical properties of collagen fibrils extracted from tendons are non-uniform along their length at the micrometre scale. We want to investigate how this non-uniformity affects fibril deformation as they are stretched or compressed. We build a platform compatible with an atomic force microscope (AFM) to strain a thin elastic sheet onto which collagen fibrils have been adsorbed, for the purposes of investigating the development of localized deformation along the length of a fibril as the elastic substrate is strained. By stretching the elastic substrate with adsorbed collagen fibrils in combination with in situ AFM imaging, the ratio of transverse elongations can be measured as it varies locally along the length of the fibril. By stretching the elastic substrate prior to depositing fibril onto the surface and releasing substrate strain, we measure fibril buckling wavelength as a response to compressive strain and its dependence on fibril cross section. In this case deviations from the ideal sinusoidal response of a buckled beam attached to an elastic substrate is used to identify mechanical non-uniformities along the fibril length.

Author: PEACOCK, Chris (Dalhousie University)

Presenter: PEACOCK, Chris (Dalhousie University)

Session Classification: DPMB Poster Session & Finals: Poster competition and Mingle session with Industrial partners/employers (9) | Session d'affiches DPMB et finales: Concours d'affiches et rencontres avec partenaires industriels et employeurs (9)

Track Classification: Physics in Medicine and Biology / Physique en médecine et en biologie (DPMB-DPMB)