BIOENGINEERING & BIOMEDICAL ENGINEERING RESEARCH SEMINAR

FABRICATION AND FUNCTION OF BIOPOLYMERIC MATERIALS

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ABSTRACT

Living organisms, such as mussels and spiders, produce remarkable polymeric fibers that self-assemble from biomolecular building blocks. Employing a cross-disciplinary approach, our group has harnessed advanced material characterization techniques, including confocal Raman spectroscopy and synchrotron X-ray diffraction, as well as traditional biochemical approaches to investigate the fabrication of several bio-fibers, including the mussel byssus, velvet worm slime fibers and mistletoe viscin fibers. Elucidation of the physical and chemical forces driving assembly of such materials provides design principles for fabrication of bio-inspired materials for biomedical applications (e.g. tissue scaffolds, surgical adhesives), as well inspiring "green" polymer processing methods. Our comparative study has identified several novel assembly mechanisms, which may have relevance in these realms. In this seminar, I will highlight recent results from our investigations.

BIO

Matthew J. Harrington is a Canada Research Chair in Green Chemistry and assistant professor in Chemistry at McGill University since 2017. He received his Ph.D. in the lab of J. Herbert Waite from the University of California, Santa Barbara. Afterwards, he was a Humboldt postdoctoral fellow and then research group leader at the Max Planck Institute of Colloids and Interfaces in the Department of Biomaterials. His research interests are focused on understanding biochemical structure-function relationships and fabrication processes of biopolymeric materials and translating extracted design principles for production of sustainable, advanced materials.

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WONG 1030
1:00PM

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