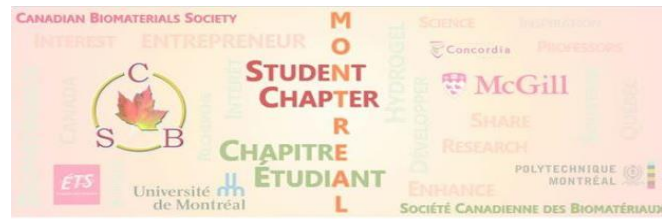




Canadian Biomaterials Society
Société Canadienne des Biomatériaux

QUEBEC CITY STUDENT CHAPTER
CHAPITRE ÉTUDIANT DE QUÉBEC



Are pleased to invite you to:

Weekly conference on Biomaterials in Pharmaceuticals



Dr. Xavier Banquy

Associate professor. Faculty of
Pharmacy - Université de Montréal

**Titre: Highly structured materials
using self-assembly principles:
from drug delivery systems to
artificial cartilage**



Dr. Nicolas Bertrand

Associate professor. Faculty of
Pharmacy - Université Laval

**Titre: Do no harm: The safety
of biomaterials in pharmacy**

Date: June 26th, 2020. Time: 13:30 EDT

via Zoom: <https://us02web.zoom.us/j/85302206664>



Title: Highly structured materials using self-assembly principles: from drug delivery systems to artificial cartilage

Abstract

Control over surface and microstructural material properties is a key requisite to ensure not only that a material functions appropriately but also to mitigate its interaction with the host and increase its life time once implanted. Such degree of control, from the micro to the nanoscale, can be achieved by combining different fabrication approaches such as polymer engineering, microfabrication and self-assembly principles.

In this talk, I will present different examples of such integration of techniques to design and produce nano and micro devices that exhibit a high degree of control of their surface properties, and most importantly, their core nano/microstructure. I will show how, by using polymer engineering and self-assembly principles, drug delivery systems such as nanoparticles with predictable core/shell nanostructure and composition can be obtained and used as drug nanocarriers. I will also show how microfabrication techniques and self-assembly can be used to direct the structure of hydrogels and help to create highly complex, yet programmable, polymeric scaffolds that could be used for microtissues fabrication.

Biography

Professor Banquy is an associate professor at the faculty of Pharmacy and the Department of chemistry at the University of Montréal. He holds the Canada Research Chair in Bioinspired Materials and Interfaces and is currently the director of the research cluster on Drug Formulation and Analysis at the Faculty of Pharmacy. His multidisciplinary research team has devoted significant efforts into the development of more efficient drug delivery systems using nanoparticle technology. In that area, his team uses polymer engineering, microfluidic processing and advanced optical techniques to design novel nanoparticles able to penetrate faster and deeper into dense tissues. In another area, his lab works on the development of bioadhesive and biolubricating materials mimicking naturally occurring proteins. Such materials can be used as supplement or replacement of defective proteins prevailing in pathological conditions.

Title: Do no harm: The safety of biomaterials in pharmacy

Abstract

The combination of biomaterials with active pharmaceutical ingredients allows the preparation of differentiated drug products with improved therapeutic indexes, decreased immunogenicity, or allowing the intracellular delivery of sensitive molecules. Despite all these promises, one characteristic often overlooked when developing new materials are their short- and long-term fate in the body. This presentation proposes a perspective on the importance of monitoring how biomaterials used in pharmaceutical sciences interact with living organisms.

This presentation will offer a brief survey of the different characteristics ensuring the design of safer biomaterials. By discussing our efforts and that of others, we will highlight the complexity surrounding the interactions between biomaterials and complex biological systems, and the challenges involved in studying the fate of biomaterials in living organisms. The focus will be put on the interactions of nanomaterials with blood proteins, the immune responses sometimes developed against biomaterials and the excretion of synthetic biomaterials from the body. Our objective is to offer a general perspective on the subject and help scientists from other backgrounds to design better tolerated biomaterials and drug products.

Biography

Nicolas Bertrand is an Associate Professor at Université Laval in Quebec City, Canada. His laboratory is located in the Centre de Recherche du CHU de Quebec. A pharmacist by training, he received his PhD in Pharmaceutical Sciences from Université de Montréal and was a postdoctoral fellow in the laboratory of Prof. Robert Langer, at the David H Koch Institute for Integrative Cancer Research at MIT. His research focuses on understanding the interactions between nanomaterials and complex environments to create more efficient drug delivery systems. His team has developed expertise in the pharmacokinetics of nanoparticles and biomaterials. In 2018, he became a *Fonds de Recherche du Quebec Santé* (FRQS) Research Scholar (Junior 1). He sits on the steering committee of the Quebec Drug Research Network (Réseau Québécois de Recherche sur le Médicament) and is an editor for Elsevier's European Journal of Pharmaceutics and Biopharmaceutics. In 2019, he was awarded the GSK/CSPS Early Career Award from the Canadian Society of Pharmaceutical Sciences.