הטכניון - מכון טכנולוגי לישראל

TECHNION - ISRAEL INSTITUTE OF TECHNOLOGY

הפקולטה להנדסה כימית
ע"ש וולפסון
The Wolfson Department of Chemical Engineering

Wolfson Department of Chemical Engineering Seminar

Lecture Hall 6, Wolfson Department of Chemical Engineering,

Wednesday 22.3.2017 at 13:30

Dr. Zhen (Justin) Hu

Chemical Engineering Dept.,

McMasrer University

Cellulose Nanocrystals: From Nature to High Performance Tailored Materials

By learning from nature and using bio-derived components, we can engineer high-performance materials with improved functionality. A thorough understanding of surface and interfacial properties is necessary to design materials with enhanced properties. In this talk, I will present the preparation and characterization of various materials using nanoparticles extracted from cellulose, the most abundant polymer on the planet and an essential renewable resource.

Cellulose nanocrystals (CNCs) are entering the marketplace as potential new ingredients in formulated products. As green and potentially food-grade additives, there is widespread interest in CNCs particularly as rheological modifiers, emulsifiers, and reinforcing agents. This talk will focus on the properties of CNCs in aqueous solution, oil-water interfaces, and air-water interfaces in the presence of different water-soluble polymers and surfactants. The results highlight not only the prospect of fabricating high performance tailored materials using CNCs but also the complexities and challenges of including CNCs in formulated products. The potential of producing hydrogels, emulsions, dry oil powders, and foams using CNCs will be extensively discussed. The remarkable attributes of these materials will likely extend the use of CNCs to potential food, cosmetic, agricultural, and pharmaceutical applications.

Refreshments will be served at 13:15