



**INDIAN INSTITUTE OF TECHNOLOGY DELHI  
DEPARTMENT OF BIOCHEMICAL ENGINEERING &  
BIOTECHNOLOGY**

**2019-20 Seminar Series**

**Wednesday, 10<sup>th</sup> April, 2019**



**Prof. John H. T. Luong  
Adjunct Professor  
University college, Cork, Ireland**

**Title: Syntheses and applications of functionalized and nanoparticle-modified nanocrystalline cellulose (NCC)**

Nanocrystalline cellulose (NCC), a rod-shaped nanoscale material with exceptional strength and physicochemical properties, can be prepared from inexpensive renewable biomass. In particular, high quality carboxylated cellulose nanocrystals are synthesized using a simple one-step procedure with ammonium persulfate. This versatile method processes a variety of cellulosic biomass without the need for pretreatments to remove non-cellulosic plant contents. Besides its potential use as a reinforcing agent for industrial biocomposites, pristine NCC exhibits low toxicity and poses no serious environmental concerns, providing impetus for its use in bioapplications. Here, we review recent developments in the use of modified NCC for emerging bioapplications, specifically enzyme immobilization, toxic dye removal, antimicrobial and medical materials, green catalysis, biosensing and controlled drug delivery. This lecture will focus on the modification of NCC with chemical functionalities and inorganic nanoparticles, reviewing practical considerations such as reusability, cytotoxicity and scale-up capability.

All are welcome

Seminar will be held in DBEB Seminar room at **Block I, Room 223** at **4 pm**

For additional information, contact Seminar coordinator Dr. Preeti Srivastava at [preeti@dbeb.iitd.ac.in](mailto:preeti@dbeb.iitd.ac.in) or Dr. D. Sundar at [sundar@dbeb.iitd.ac.in](mailto:sundar@dbeb.iitd.ac.in)

**JOHN H.T. LUONG**  
**PhD Biomedical Engineering, McGill University, 1978**

Over 350 published papers, 4 books and 8 US patents.

*Total citations: 19498 with h-index = 74 (Google Scholar).*

*Current position* : Walton Fellow, University College Cork, Ireland.

*Past positions*: Distinguished principal scientist: National Research Council Canada, *Professor & Head*: Nanyang Technological University, Biomedical Engineering.

*Distinguished professor*: Zhangzhou University, China (1000 high-end foreign expert program).

*Adjunct Professors*: McGill University & University of Waterloo (Canada).

*Visiting Professors*: National University of Singapore (Biocore), University of Lille (France), Bar-Ilan University (Israel).

*Supervisors*: over 40 PhD students and Postdoctoral fellows

### ***PROFESSIONAL ACTIVITIES***

Appeared in American Men and Women of Science, 16 th Edition Jacques Cattell Press, R.R. Bowker Company, New York, NY, USA, 1986.

### ***AWARDS:***

- 1) The Canadian Society of Chemical Engineering: 1992 Albright & Wilson Americas Award. for a resident of Canada who has made a distinguished contribution in Chemical Engineering before the age of 40.
- 2) The Jacques Bombardier 1994. This distinguished award is given annually to a resident of French Canadian who has made an outstanding contribution in science and technology.
- 3) The Sprinks Award, The University of Saskatchewan, Canada 2003 (recognition for a distinguished contribution in frontier research).
- 5) National Science Council (Taiwan) and National Research Council Canada, Eminent Research Award (2005) for international collaboration
- 6) The Walton (*Nobel Laureate Chemistry*) Visitor Award (Ireland, 2006-2007) Science Foundation Ireland.
- 7) The Chinese High-End Foreign Experts Recruitment Program, Zhengzhou University, Henan Province (2012-2014). Visiting Award.

***EDITORS***: Biotechnology Advances (Elsevier) & Nanomaterials (MDPI)