



THE HONG KONG  
POLYTECHNIC UNIVERSITY  
香港理工大學



DEPARTMENT OF  
CIVIL AND ENVIRONMENTAL ENGINEERING  
土木及環境工程學系  
CEE



Hong Kong Concrete Institute  
香港混凝土學會



## Bio-Inspired and Multi-functional Co-Extruded Fibers for Smart Ultra-High-Performance Fiber-Reinforced-Concrete

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### ABSTRACT

Fibers used in Ultra-High-Performance Fiber-Reinforced-Concrete remain un-engineered and for most part borrowed from ceramic-matrix, polymer-matrix and metal-matrix composites. This presentation will describe some recent advances in the development of high performance fibers engineered for UHPC. Two series of fibers will be covered. One of these will be bio-inspired, surface exalted cellulose fibers that provide internal curing in UHPC matrices. The other will be co-extruded polyolefin fibers that carry strategic coatings that provide an intended functionality. The said functionality may vary from an enhanced bond using hydrophilic materials and nano-pozzolans to creating a conducting surface that may provides concrete with smartness and sensing abilities.

**Date:** 7 January 2019 (Monday)

**Time:** 6:30-7:30pm

**Venue:** Y305, Block Y, The Hong Kong Polytechnic University

### SPEAKER'S BIOGRAPHY

Nemkumar (Nemy) Banthia is a Distinguished Professor and Senior Canada Research Chair at University of British Columbia. His primary area of research is in Sustainable Concrete Infrastructure with emphasis on nano-modified fiber reinforced composites, ultra-high performance concrete materials, waste recycling, fracture analysis, earthquake strengthening and sensor based structural health monitoring. Dr. Banthia holds 9 patents, has published over 400 refereed papers and has edited 20 volumes. He serves on the Editorial Boards of eight international journals and is the Editor-in-Chief of the *J. of Cement and Concrete Composites*—a journal with the highest Impact Factor in the field. His awards include the Wason Medal of American Concrete Institute, Solutions Through Research Award of the BC Innovation Council, Wolfson Merit Award of the Royal Society of the UK, Killam Research Prize from the Killam Foundation, Horst Leipholtz Medal of the Canadian Society for Civil Engineering, Mufti Medal of Excellence of the International Society for Health Monitoring of Infrastructure, Leadership in Science and Technology Award of the Drishti Foundation, Industry Marvel Award of the Darpan Society and Global Citizenship Award of alumni-UBC. He is a fellow of the American Concrete Institute, Canadian Society for Civil Engineering, Indian Concrete Institute, Canadian Academy of Engineering and the Royal Society of Canada.

\*\*\* All Interested Are Welcome \*\*\*

For further information, please contact Dr B.J. Zhan at Tel. 3400-4478 or [bj.zhan@polyu.edu.hk](mailto:bj.zhan@polyu.edu.hk)  
Certificates of attendance will be provided to participants if they attend the whole lecture.