

“BNC/ME/BME Seminar”

February 13th, 2014 @ 10:00am

MRGN, ROOM 121

Warren C. W. Chan

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Institute of Biomaterials & Biomolecular Research (IBBME)

Donnelly Centre for Cellular and Biomolecular Research (CCBR)

Title: The complexities of targeting nanoparticles into solid tumors

Bio: Dr.Chan is currently a Full Professor in the Institute of Biomaterials and Biomedical Engineering at the University of Toronto. He also holds the Canadian Research Chair in Bionanotechnology and is affiliated with the Department of Materials Science and Engineering, the Terrence Donnelly Center for Cellular and Biomolecular Research Chemistry, Chemistry and Chemical Engineering. His research interest is in the development of nano- and microtechnology for cancer and infectious disease diagnosis. He has received the NSERC E.W. R. Memorial Steacie Fellowship (Canada), BF Goodrich Young Inventors Award, Lord Rank Prize Fund award in Optoelectronics (England), and Dennis Gabor Award (Hungary). Dr. Chan received his B.S. degree from the University of Illinois in 1996 and Ph.D. degree from Indiana University in 2001. He did his post-doctoral training at the University of California (San Diego). He is currently an Associate Editor of ACS Nano and is currently on the Editorial Advisory Board of the journals Nanomedicine, Advanced Healthcare Materials, and Journal of the Automatic Laboratory Automation.

Abstract: Nanoparticles of different sizes, shapes and material properties have many applications in biomedical imaging, clinical diagnostics and therapeutics. Strategies that can reproducibly prepare colloidal nanoparticles of a wide range of geometries with a tight size distribution have been achieved and unique size and shape dependent optical, magnetic, electrical, and biological properties have been discovered. A broad of range of applications of nanoparticles have been demonstrated. In spite of what has been achieved so far, a complete understanding of how cells and animals interact with nanoparticles of well-defined sizes remains poor. This has led to the inability to rationally design nanoparticles for cancer applications or has led to the inability to establish a definitive conclusion on the toxicity of nanomaterials. In this presentation, the properties of nanomaterials and challenges associated with using them for cancer targeting will be discussed, and finally, there will be a discussion on how microfluidics and DNA assembly techniques can be exploited to address the current limitations of nanomedicine.