



McGill
Department of Civil Engineering
and Applied Mechanics

Environmental and Water Resource Engineering Seminar Series
BRACE CENTRE FOR WATER RESOURCES MANAGEMENT
DEPARTMENT OF CIVIL ENGINEERING AND APPLIED MECHANICS

Prof. Pedro J. Alvarez

Chair, Department of Civil and Environmental Engineering
Rice University

**ENVIRONMENTAL IMPLICATIONS AND
APPLICATIONS OF NANOTECHNOLOGY:
LESSONS LEARNED FROM BACTERIAL-
NANOPARTICLE INTERACTIONS**

The production and use of nanomaterials in commercial products is rapidly outpacing the development of knowledge and appropriate regulations to mitigate potential risks associated with their release to the environment. Therefore, it is important to understand how engineered nanoparticles with high probability of environmental release interact with microorganisms, which form the basis of all known ecosystems and provide many critical environmental services. On the other hand, some nanomaterials also hold a significant potential to develop new capabilities to alleviate past and future environmental challenges, including a growing need for water disinfection and microbial control. This presentation will consider the antibacterial properties and mechanisms of fullerenes and other nanomaterials within the context of environmental implications and applications. Research needs to steward ecologically responsible nanotechnology will be discussed. Opportunities for water treatment will be illustrated by considering the application of functionalized fullerenes to enhance viral inactivation in UV and solar disinfection systems, as well as in antimicrobial surface coatings, and the use of silver nanoparticles to enhance biofouling resistance in water filtration membranes.

Prof. Alvarez is the George R. Brown Professor and chair of the Department of Civil and Environmental Engineering at Rice University. He received the **BEng degree in Civil Engineering from McGill University** and MSc and PhD degrees in Environmental Engineering from the University of Michigan. Current research interests include environmental biotechnology and bioremediation, fate and transport of toxic chemicals; water footprint of biofuels, and environmental nanotechnology.

Friday, September 24, 2010

ROOM CHANGE: McGill Downtown Campus, ARTS Building, Room W 215 (WEST wing)

11:30 am - 12:30 pm

EVERYONE WELCOME