

## **Seminar Series**

**School of Materials Science and Engineering**

**Thursday, October 1, 2009**

**5:00 PM – Room 200 Olin Hall**

### **Biodegradable Nanoparticles as a Drug Delivery Platform**

**Professor Frank Alexis  
Department of Bioengineering  
Clemson University**

#### **Abstract:**

Nanocarriers can improve the therapeutic index of currently available drugs by increasing their efficacy, lowering their toxicity, and creating steady-state therapeutic levels of drugs for an extended time period. The breakthrough potential of nanotechnology is increasingly recognized: Several first-generation nanocarriers have been approved by the FDA for cancer therapy, and targeted nanocarriers are in clinical phase development. Nanotechnologies are becoming increasingly more complex with the ability to have multifunctional properties. We will present multifunctional nanoparticle platforms for cancer therapy and immunology. In particular, we will present in vitro and in vivo data about two different approaches of using nanoparticles as nanoimmunotherapeutics and two different approaches of delivering two different drugs simultaneously for cancer therapy.

#### **Bio:**

Dr. Alexis received his Bachelor degree of chemistry and Master degree of materials science in France at the Technological University of Montpellier. In 2000, he became interested in biomaterials for drug delivery and pursued his research on biodegradable polymers for drug eluting stent applications at the School of Materials Science Engineering at the Nanyang Technological University in Singapore. In 2003, he continued his research on drug delivery in the Institute of Bioengineering and Nanotechnology in Singapore. His interest was focus on the synthesis of non viral gene delivery polymers and peptides. In 2006, he began his research training as a postdoctoral fellow in the laboratories of Dr. Omid Farokhzad and Dr. Robert Langer at the Brigham and Women's Hospital (BWH) and MIT, respectively. His research was focused on the development of nanoparticle drug delivery systems for cancer therapy, oral delivery, and vaccine therapy. Recently, Dr Frank Alexis joined the Bioengineering department at Clemson University as an Assistant Professor to carry out independent research. He is interested to develop drug delivery nanoparticles for therapeutic and imaging applications. In particular, synthesizing new materials, developing self-assembly nanostructures, and developing multifunctional nanoparticles.