

203rd IBB Seminar

Interfacing Nanomaterials with Biology: From CRISPR Delivery to Cell-Based Sensing

Lecturer: **Prof. Vincent M. Rotello**

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Date: March 22nd/2018 (Thr) 15:30 - 17:00

Place: Inst. Biomat. Bioeng.

**Tokyo Medical & Dental University
Bldg 22,1F, 2nd Meeting Room**



Abstract: A key issue in the use of nanomaterials is controlling how they interact with themselves and with the outer world. Our research program focuses on the tailoring of nanoparticles of surfaces for a variety of applications, coupling the atomic-level control provided by organic synthesis with the fundamental principles of supramolecular chemistry. Using these nanoparticles, we are developing new strategies for biological applications. This talk will focus on the interfacing of nanoparticles with biosystems, and will discuss the application of self-assembled nanoparticles as delivery vehicles. We will demonstrate the delivery of proteins and nucleic acids directly into the cytosol, including functional CRISPR systems. We will also show how this efficient cellular delivery translates into effective systemic CRISPR editing in vivo. Finally, this presentation will also feature the use of nanoparticles for diagnostic applications, focusing on using selective nanoparticle-protein interactions to generate array-based ("chemical nose") sensors for cell geno- and phenotyping, including rapid determination of therapeutic mechanism.

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