



The Chinese University of Hong Kong
Biomedical Engineering Seminars Series

Time: 10:30am-11:30am, 3 Jun 2016 (Fri)

Venue: Rm.222, Ho Sin Hang Engineering Building, CUHK

Teaching Old Oligos New Tricks – A Macromolecular Approach

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Abstract

The promise of using nucleic acid as therapeutic materials is being gradually realized. However, the rate of this realization is too slow, hampered by poor biopharmaceutical properties of naked nucleic acids and the lack of appropriate synthetic carriers. This presentation will focus on the development of new methods for transferring genetic materials to cells using non-electrostatic complexation strategies. The new systems rely upon the arrangement of oligonucleotides and/or polymer strands, which, among many properties, provides the oligonucleotide with steric selectivity towards complementary strands vs. proteins. We have also applied the lessons learned from this approach to the design of new structures for many other applications such as self-assembly and drug/DNA co-delivery.

Biography

Dr. Ke Zhang obtained his BS degree in 2005 in Applied Chemistry from Nanjing University of Technology, China. He then studied polymer chemistry with Prof. Karen Wooley at Washington University in St. Louis focusing on shell-crosslinked knedel-like nanoparticles and gene delivery, and obtained a PhD in Chemistry in 2009. Thereafter, Dr. Zhang was a postdoctoral fellow in the laboratory of Prof. Chad Mirkin at Northwestern University to develop hollow spherical nucleic acids, a carrier-free platform for gene regulation. In 2012, Dr. Zhang joined Northeastern University as an assistant professor. His current research includes the design and synthesis of unique polymer superstructures, nucleic acid-polymer conjugates, and drug delivery.