

Virus Particles as Enabling Building Blocks for Nanomaterials Development

BY Prof. Qian Wang

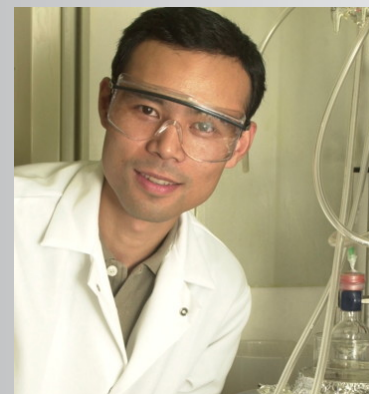
*Department of Chemistry and Biochemistry
University of South Carolina*

ABSTRACT

Our group works on using viruses and bacteriophages as building blocks for materials development and biomedical applications. Viruses, from the chemists' perspective, are protein-based supramolecules with different shapes and variety of sizes spanning from tens to hundreds of nanometers. A normal virus shares one of two basic structural symmetries structures: icosahedral or helical, giving a sphere- and rod-shape particle, respectively. It was logical to select such well-defined nanoscale systems as primary building platform for many new interdisciplinary endeavors. On the basis of the surface modification with conventional bioconjugation chemistry, "click" reaction, and genetic modification, we can control the self-assembly of spherical particles and rod-like viruses with polymers to form 1D, 2D and 3D self-assemblies. These hierarchically assembled biomaterials offer a unique scaffold to investigate the drug delivery, controlled release and cell response. In particular, I would like to introduce our recent studies in understanding how cells respond to surface nanotopographical cues and to 3D nano/micro-environment.

BIOGRAPHY

Professor Qian Wang received his BS degree in Chemistry in 1992 and a Ph.D. in Organic Chemistry in 1997, both from Tsinghua University. After postdoctoral experiences with Prof. Manfred Schlosser at University of Lausanne and Prof. M. G. Finn at the Scripps Research Institute, he started as an Assistant Professor at University of South Carolina in 2003, where he is currently the Robert L. Sumwalt Professor of Chemistry. Dr. Wang's laboratory focuses on using chemical biology tools to probe intracellular activities and the development of hierarchically structured nanomaterials to study the cooperative response of cells to extracellular matrixes. Professor Wang published over 170 publications in peer reviewed journals, with funding from NSF, DoE, DoD, and NIH. Awards he has received include the NSF CAREER Award (2008), the Alfred P. Sloan Research Scholar Award (2008), the Camille Dreyfus Teacher Scholar Award (2008), the CAPA Distinguished Junior Faculty Award (2008), NSF American Competitiveness Fellow Award (2009), the South Carolina Governor's Young Scientist Award (2009), and the Fellow of the American Association for the Advancement of Science (2013).



EVENT DETAILS

DATE:
March 6, 2013

TIME:
11:00 AM

LOCATION:
Babbio 122
Stevens Institute of
Technology

ATTENDANCE:
Public

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