Speaker: Prof. Yufeng Wang  
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Title: Colloids with valence: Fabrication and Directed Self-Assembly

Date: June 16, 2017 (Friday)

Time: 10:30 a.m.

Venue: L3, Science Centre

< Abstract >

Self-assembly of colloidal particles has emerged as a promising strategy to construct micrometer-scale 3D ordered composite materials such as photonic crystals. Meanwhile, colloidal particles can serve as model building blocks to study the self-assembling processes of molecular systems. However, the lack of directional interactions between the common isotropic particles has imposed much limitation on the study of colloidal self-assembly. In this talk, I will discuss strategies we developed that circumvent this issue by introducing several new colloidal systems including colloids with valence, 3D lock and key colloids, DNA coated colloids, etc. These colloids often possess reversible, specific, and directional interactions and well-defined geometries, the self-assembly of which results in a wide variety of colloidal architectures that mimics many natural molecular shapes as well as structures that find no analogy in nature. I will also briefly discuss the electric field-assisted dynamic self-assembly of colloids with tunable surface patches; they form colloidal crystals and helices. The new and complex colloidal materials we designed are potentially useful in a wide spectrum of applications including photonics, plasmonics, catalysis, drug delivery, biomedicine, modeling etc.

References:

Yufeng Wang received his BS in chemistry from Peking University in 2008, where he studied polymer chemistry under the guidance of Prof. Xinhua Wan. He then joined the group of Prof. Marcus Weck at New York University, department of chemistry, studying the fabrication and self-assembly of complex materials including colloids and polymers. Under the supervision of both Prof. Marcus Weck and Prof. David Pine, he obtained his Ph. D in materials chemistry in 2014. From 2014 to 2016, he did his postdoctoral research with Prof. Jeremiah Johnson at Massachusetts Institute of Technology working on creating dynamic yet robust polymer materials through molecular self-assembly. Dr. Wang joined the department of chemistry, the University of Hong Kong in Fall 2016 where he is currently an assistant professor.

ALL ARE WELCOME

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