MSE-Colloquium@NTU

7 March 2018, 4:00 pm

Lecture Theatre 6, Nanyang Technological University, Singapore

Synthetic Architectures of Multiphasic Functional Nanocomposites

Professor Zeng Hua Chun

Department of Chemical and Biomolecular Engineering

National University of Singapore

Abstract

In our research group, we design and synthesize multiphasic nanocomposites for various applications in chemical technology. In preparing such new functional materials, various synthetic approaches have been developed. Normally, the primary active phases are synthesized into monodispersed nanoparticles through wet chemical routes, while the hosting matrices are often prepared as porous and/or hollow materials in solution with the desired structural complexity and material functionality. In particular, integration of different functional components can be achieved in a step-by-step manner. Both *top-down* (e.g., dissolution and regrowth) and *bottom-up* (e.g., self-assembly and deposition) strategies were employed in achieving synthetic architectures, benefiting from the rapid advancement of nanoscience and maturing materials chemistry over the past two decades. It is anticipated that the structural and compositional requirements of such state-of-the-art nanocomposites can be met at a higher level of sophistication and precision, but at a lower cost. However, realization of this paradigmatic shift would require collective efforts from the industry and research communities. We envision that synthetic architectures will be an important field in the further development of nanocomposites. Further investigation and invention of integrative methodologies for producing multiphasic nanocomposites could lead to more powerful functional materials.

Biography

Professor Zeng Hua Chun obtained his B.Sc. in Chemistry from Xiamen University in 1982 and Ph.D. in Physical Chemistry (with Professor Keith A. R. Mitchell) from the University of British Columbia in 1989. Following postdoctoral work (with Professor John C. Polanyi, Nobel Laureate in Chemistry, 1986) at the University of Toronto, he joined the National University of Singapore in 1991. His research interests are focused on exploratory design and synthesis of inorganic nanostructures, with an emphasis on catalysis. Professor Zeng is ranked among the Top 100 Chemists from 2000 – 2010 by Thomson Reuters and Times Higher Education. He was also listed among the Highly Cited Researchers by Thomson Reuters in 2014 and among the Most Cited Researchers by Shanghai Ranking in 2016.

NANYANG TECHNOLOGICAL UNIVERSITY SINGAPORE

SCHOOL OF MATERIALS SCIENCE AND ENGINEERING