Academic Lecture

State Key Laboratory of Chemical Resource Engineering

From biomolecular specificity to high performing catalysts

报告人：黄 昱 教授 *(UCLA, USA)*

时 间：2017-08-30 (周三)上午 9:30-10:30

地 点：图书馆一层中心会议室

报告简介：

Material formation in nature is precisely controlled in all aspects from crystal nucleation, growth to assem bly to deliver superior functions. Specific biomolecule-material interactions have been hypothesized to pla y important roles in these processes. Proteins, polymers and small molecules have been extensively explor ed to replicate the degree of control in material formation in vitro and for nonbiogenic materials. However the organic-inorganic interfacial interaction is still far from being understood which hinders the further ad vancement of biomimetic material formation. In this talk I will share our efforts on decoding the myth of b iomolecular specificity to material surface and their roles in controlling crystal nucleation and growth. The selection of facet specific short peptides and their abilities in guiding predictable morphology control of Pt nanocrystals will be first demonstrated. Then detailed experimental and theoretical studies on binding mec hanism will be discussed. Based on mechanistic understanding, we designed small molecules bearing mol ecular signature for facet specific adsorption to modulate the nucleation/growth of the Pt nanocrystals to d eliver the expected nanostructures and functions. These studies open up opportunities in understanding the molecular details of inorganic-organic interface interaction, which can one day lead to the development of a library of molecular functions for biomimetic materials design and engineering.

报告人简介：

Prof. Huang received her B.S. in Chemistry from University of Science and Technology of China, and her Ph.D in physical chemistry and M.A in Chemistry from Harvard University. Before she embarked on her independent career at UCLA She was awarded the prestigious Lawrence Fellowship and held a joint postdoctoral position with Lawrence Livermore National Laboratory (LLNL) and MIT. At UCLA Prof. Huang’s research focuses on mechanistic understanding of nanoscale phenomena and on exploiti ng the unique properties of nanoscale materials for various applications. Taking advantage of the uniqu e roles of nanoscale surfaces and interfaces, she is creating methodologies to apply the latest developm ents in nanoscale materials and nanotechnology for probing nanoscale processes that can fundamentall y impact a wide range of technologies including materials synthesis, catalysis, fuel cells, and devices a pplications.

黄昱博士在Nature、Science等顶尖学术刊物发表多篇论文；曾在纳米研究领域取得突破性成果，被《科学》杂志评价为“2001年度重大突破”；还因太阳能光解水项目重大研究成果而获得2009年度美国“青年科学家与工程师总统奖”。

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