



中心系列讲座 ICQM Weekly Seminar Series  
“Quantum plasmonics: A microscopic view of  
surface plasmon and its coupling with electrons”



**Prof. Shiwu Gao 高世武**  
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**Time: 4:00pm, May. 11, 2011 (Wednesday)**

**时间: 2011年5月11日 (周三) 下午4:00**

**Venue: Room 607, Conference Room A, Science Building 5**

**地点: 理科五号楼607会议室**

**Abstract**

The study of surface plasmons has attracted tremendous attention in recent research due to the potential applications in sensing, spectroscopy, energy harvesting and conversion, and quantum computing. In contrast to the rapid experimental progress, microscopic understanding of surface plasmons of real materials, in particular its coupling and interactions with other surface excitations, is still rather limited even for the simplest crystalline surfaces. In this talk, I will present a quantum-mechanical approach to surface plasmon and its coupling and damping by electrons. I will discuss in particular the electronic collectivity and quantum splitting, lifetime oscillation, symmetry-dependent screening in ultrathin films, and coupling of plasmon excitation to electron transfer and transport in nanogaps.

**About the Speaker**

高世武(Shiwu Gao), 瑞典哥德堡大学物理系教授(2006-)。中科院百人计划(2004), 中科院表面物理国家重点实验室主任(2006-2009), 中国国家杰出青年基金(外籍)(2008), 瑞典哥德堡大学“中国大使”(2010-)。从事表面界面材料物理的基础理论和计算科学研究, 在电子结构, 量子耗散理论, 表面和水分子相互作用, 电子激发-分子能量转换和耗散, 表面等离子激元等方面做过系列研究和贡献。代表工作: 首次提出Eigler原子开关理论模型, 隧道电流分解单氧分子的理论解释和预测, 表面界面水分子的结构和物性, 热电子振动激发和脱附动力学主方程的推导和应用, 推广Lindblad量子耗散理论, 并应用于表面飞秒动力学过程中, 表面等离子激发态的量子阐述。发展WIEN计算程序并行方法, 耗散量子动力学波包动力学方法。共发表论文60篇, 被SCI引用大于1350余次。在Gordan Research Conference, APS march meeting, 欧洲物理学会(ERC), SPIE等大型国际会议做过多次邀请报告(>40次)。在欧洲, 美国, 亚洲各大学作过邀请报告和讲学多次(>30次)。