



## Seminar

## “Plasmonic Nanostructures: From Quantum Effects to Fano Interference”

**Prof. Peter Nordlander**

Department of Physics, Rice University

**Time: 10:00 am, Apr. 6, 2011 (Wednesday)****时间: 2011年4月6日 (周三) 上午10:00****Venue: Conference Room A (607), No. 5 Science Building****地点: 理科五号楼607会议室****Abstract**

The recent observation that metallic nanoparticles possess plasmon resonances that depend sensitively on the shape of the nanostructure has led us to a fundamentally new understanding of the plasmon resonances supported by metals of various geometries. This picture- “plasmon hybridization”, [1] reveals that the collective electronic resonances in metallic nanostructures are mesoscopic analogs of the wave functions of simple atoms and molecules, interacting in a manner that is analogous to hybridization in molecular orbital theory. The new theoretical insight gained through this approach provides an important conceptual foundation for the development of new plasmonic structures that can serve as substrates for surface enhanced spectroscopies and subwavelength plasmonic waveguiding and other applications. The talk is comprised of general overview material interspersed with a few more specialized “hot topics” such as plasmonic interference effects, [2] quantum plasmonics, [3] and plasmonic nanowire devices for nanoscale control and manipulation of light. [4]

[1] H. Wang et al., *Acct. Chem. Res.* 40(2007)53[2] B. Lukyanchuk et al., *Nature Mat.* 9(2010)707, J. Fan et al., *Science* 328(2010)1135[3] J. Zuloaga et al., *Nano Lett.* 9(2009)887, *ACS Nano* 4(2010)5269 ; P. Song et al., *J. Chem. Phys.* 114(2011)074701[4] Y. Fang et al., *Nano Lett.* 9(2009)2049, 9(2009)4383, 10(2010)1831, 10(2010)1950, 10(2010)3482,**About the Speaker**

Prof. Peter Nordlander obtained his PhD degree in Theoretical Physics from Chalmers University of Technology in Gothenburg in Sweden in 1985. After postdoctoral positions at IBM Thomas J. Watson Research Center at Yorktown Heights (USA) and AT&T Bell Laboratories at Murray Hill (USA), he joined the faculty at Rice University where he is currently Professor of Physics and Astronomy and Professor of Electrical and Computer Engineering. He has been a Visiting Professor at University of Paris and is currently a Visiting Professor at the Institute of Physics at the Chinese Academy of Sciences. His current research is focused on the theoretical and computational modeling of Plasmonics and Nano-photonics phenomena. He is an associate editor of *ACS Nano*. He is a fellow of APS, AAAS, and SPIE and is the recipient of the Charles Duncan Award. He has published more than 200 refereed articles, given more than 200 invited presentations at international conferences and workshops, and has been cited more than 8000 times with an h-index of 48.