Dr. Peter Nordlander
Rice University
Hosted by: Dr. Jon Camden

“Plasmonics: From Quantum Effects to Fano Interference and Light Harvesting”

Biography
Professor Peter Nordlander (http://nordlander.rice.edu) obtained his PhD degree in Theoretical Physics at 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) and at Rutgers University, he joined the faculty at Rice University in 1989 and 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 at the Institute of Physics at the Chinese Academy of Sciences. His research background is in theoretical condensed matter and nanoscience. His current research is focused on the theoretical and computational modeling of Plasmonics and Nanophotonics 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 and the Willis E. Lamb Award for Laser Science and Quantum Optics.

Abstract
The “plasmon hybridization” concept, shows that the plasmon resonances in complex metallic nanostructures interact and hybridize in an analogous manner as atomic orbitals form molecular orbitals in molecules. The insight gained from this concept provides an important conceptual foundation for the development of new plasmonic structures that can serve as substrates for surface enhanced spectroscopies, chemical and biosensing, and subwavelength plasmonic waveguiding and other applications. The talk is comprised of a general and introductory overview material interspersed with a few more specialized “hot topics” such as plasmonic Fano resonances, quantum plasmonics, quantum plexcitonics, and active plasmonic nanoantennas for enhanced light harvesting, and plasmon induced chemical reactions.

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