

University of Macau
Faculty of Science and Technology
Institute of Applied Physics and Materials Engineering

Ref: FST/RTO/0076/2015

Colloidal Plasmonic Metal Nanocrystals

By

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Date: 08 June 2015 (Monday)

Time: 2:30 p.m.

Venue: E11- 1039

Abstract

In this presentation, the synthesis of colloidal gold nanocrystals and discuss their plasmonic properties and applications will be described. The syntheses of gold nanospheres, nanorods and nanobipyramids will be mainly described. Their syntheses are all based on seed-mediated growth. Fine size tuning is realized through mild oxidation and anisotropic overgrowth, which allows for precise control of the plasmon resonance energies. All of gold nanocrystals have very narrow size distributions. Their sizes and thus their localized plasmon energies can be readily varied over broad ranges by carefully controlling the synthetic conditions. I will then present the attractive plasmonic features of these gold nanocrystals, including their tunable plasmon wavelengths over a wide spectral range, extremely large absorption/scattering cross-sections, and large enhancements of local electric fields and densities of photonic states. Finally I will describe plasmonic applications out of our gold nanocrystals. Examples will include active plasmon switching, plasmonic catalysis, plasmonic sensing, time-temperature indicators and local photothermal heating.

Biography

Prof. Jianfang Wang obtained BS from University of Science and Technology of China in 1993, MS from Peking University in 1996, and PhD from Harvard University in 2002. He did postdoctoral studies in University of California,

Santa Barbara from February 2002 to July 2005. He joined in Department of Physics of The Chinese University of Hong Kong (CUHK) as an assistant professor in 2005 and became an associate professor in 2011. His current research interests focus on metal nanocrystals, nanoplasmonics and metal oxide nanostructures. Details about his research group can be found at <http://www.phy.cuhk.edu.hk/~jfwang/> and at <https://scholar.google.com/citations?user=7SK4Gn4AAAAJ&hl=en&oi=ao>.

All are Welcome!