Research Seminar

NUS National University of Singapore | Department of Chemistry Faculty of Science

Chemical Plasmonics with Metal Nanogap Particles

by Professor Jwa-Min Nam
Seoul National University, South Korea

Host: Prof Lu Xiaogang | Fri, 14 June 2019 15:00 – 16:30 S8-03-14 Executive Classroom

About Professor Jwa-Min Nam

After studying chemistry at Hanyang University, Professor Nam obtained his doctorate from the University of Northwestern USA in 2004 under the supervision of Professor Chad Mirkin and Professor Mark Ratner. He continued his post doctorate at UC Berkeley with Professor Jay Groves till 2005. In 2006 he joined the Seoul National University as an Assistant Professor and in 2015 he became a full Professor. Currently Professor Nam also serves as the Director of Center for Innovative Nanomedical Technologies and as the Department Head of Department of Education, National Center for Inter-University Research Facilities at the Seoul National University. For his works and achievements, Professor Nam has been awarded many awards such as Basic Research Award, the Minister, Ministry of Science and ICT, Republic of Korea (2017), Chinese Academy of Sciences Fellowship for International Scientists (2014), Distinguished Lectureship Award, Chemical Society of Japan (2013), Presidential Young Scientist Award, President of the Republic of Korea (2012), and many more.

Abstract

Designing, synthesizing and controlling plasmonic metal nanostructures with high precision and high yield are of paramount importance in optics, nanoscience, chemistry, materials science, energy science and biotechnology. In particular, synthesizing and utilizing plasmonic nanostructures with ultrastrong, controllable and quantifiable signals is key to the wide and practical use of plasmonic enhancement-based spectroscopies including surface-enhanced Raman scattering (SERS), metal-enhanced fluorescence (MEF) and Rayleigh scattering, but highly challenging. Here, he will introduce the design and synthetic strategies for molecularly tunable and structurally reproducible plasmonic nanostructures (particularly, plasmonically coupled structures with a nanogap) with strong, controllable and quantifiable SERS, MEF and dark-field light scattering signals. he will also show their potentials in addressing some of important challenges in science (for example, quantitative plasmonics), and discuss how these new plasmonic materials can lead us to new breakthroughs in biotechnologies including biosensing, bioimaging and theranostic applications and bio-computing.

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