Closing Lecture:

Colloidal BioNanoPlasmonics

Prof. Luis M. Liz-Marzán

CIC biomaGUNE, BRTA, and Ciber-BBN

Ikerbasque, Basque Foundation for Science

llizmarzan@cicbiomagune.es

www.bionanoplasmonics.com

Abstract: Metal nanoparticles display very interesting optical properties, related to localized surface plasmon resonances (LSPR), which give rise to well-defined absorption and scattering peaks in the visible and near-IR spectral range. Such resonances can be tuned through the size and shape of the nanoparticles, and are highly sensitive towards dielectric changes around the particles and to their specific organization within assemblies. Therefore, metal nanoparticles have been proposed as ideal candidates for biosensing and bioimaging applications.

In this communication, we present several examples of novel strategies to employ nanostructured materials comprising gold nanoparticles, as substrates for ultrasensitive detection and imaging of biorelevant molecules, based on different plasmonic phenomena such as surface enhanced Raman scattering and plasmonic chirality.

Biography: Luis M. Liz-Marzán is a PhD from the University of Santiago de Compostela and has been postdoc at the van't Hoff Laboratory (Utrecht University) and visiting professor at various institutions worldwide. After an extended academic career at the University of Vigo, he is currently Ikerbasque Research Professor and Scientific Director of the Basque Centre for Cooperative Research in Biomaterials (CIC biomaGUNE), in San Sebastian. Since 2015 he is also the PI of the CIC biomaGUNE node of the Biomedical Research Networking Center: Bioengineering, Biomaterials and Nanomedicine (Ciber-BBN). Luis M. Liz-Marzán is recognized by his work on the application of colloid chemistry to the (nowadays crowded) field of nanoplasmonics. He has been one of the pioneers in the colloidal synthesis of metal nanoparticles, with relevant contributions toward the control over the morphology of such nanoparticles, as well as toward tailoring nanoparticle surface chemistry and self-assembly. Recent work by the group has focused on surface bioconjugation (e.g. with glycans and cross-linkable polymers) but also on drug delivery and understanding nanoparticle fate within living cells. The scope of the research in Liz-Marzán's group has not been limited to synthetic aspects, but had the ambition to perform morphological and optical characterization at the highest level, to apply theoretical methods to model particle growth and optical properties, and ultimately applying them to the design of applications, mainly related to ultrasensitive detection and early diagnosis of diseases. Liz-Marzán and co-workers have contributed to both the comprehension of the phenomenon of surface enhanced Raman scattering (SERS) and the design of substrates that improve the performance of SERS sensors toward the detection of disease biomarkers.

[ONLINE] - Zoom

July 6, 2021

12:00 pm

This event is part of the **"Tutored Training Activities"** at the MASTER CHEM BIO&MAT CHEMISTRY at the Interface with BIOLOGY and MATERIALS Science