



DIRECTION DES SCIENCES DE LA MATIERE,
INSTITUT RAYONNEMENT MATIÈRE DE SACLAY
SERVICE DE PHYSIQUE ET DE CHIMIE DES SURFACES ET DES INTERFACES

SEMINAIRE

Mardi 12 Juin 2012 à 11h00

Bâtiment 466, salle 111 - CEA Saclay, 91191, Gif sur Yvette

Optical Properties of Metal Nanoparticles as Probed by Photosensitive Molecules

Dr. Claire Deeb[†]

Laboratory of Nanotechnology and Optical Instrumentation LNIO
University of Technology of Troyes UTT
12 rue Marie Curie 10010 Troyes FRANCE
Center for Nanoscale Materials
Argonne National Laboratory
9700 South Cass Avenue, Argonne, IL 60439

(invité par Céline FIORINI)

While past research has considered the interaction between metal nanoparticles and photosensitive molecules, especially the possibility of initiating nanoscale photopolymerization based on the localized surface plasmons of such particles, our group work describes the in-depth characterization and optimization of such interactions that result in nanoscale photopolymerization. The present work demonstrates our ability to use the nanophotopolymerization process to quantitatively map with unprecedented resolution, better than 5 nm, both, the near-field of metallic nanoparticles associated with their localized surface plasmons, and the local electric fields resulting from surface charges density at metal/dielectric interfaces.

We will emphasize that a precise characterization of the nanoscale molecular mold of the confined electromagnetic field of metal colloids enabled us to quantify the nearfield depth and its enhancement factor. Moreover, a near-field spectrum corresponding to the response of localized surface plasmons of a single metal nanoparticle will be assessed.

Additionally, we present nanoscale resolution maps of the spatial distribution of the surface charge density created by the electric field discontinuity at a nonresonant metal/dielectric interface. Furthermore, this work will prove that the nanoscale photopolymerization approach does not only map the near-field of metal nanoparticles, yet it constitutes, from a more fundamental point of view, a unique opportunity to investigate nanophotochemistry.

[†]Attention: Date Inhabituelle

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