



SEMINAIRE ISMO

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***Gold nanoparticles as nanosources of heat.
Applications in physics, chemistry and biology***

The use of gold nanoparticle as nanosources of heat is now at the basis of a well-established area of research, termed thermoplasmonics.

So far, the most famous practical developments have been related to biomedical applications (cancer therapy, drug release, nanosurgery, etc). One of the major limitation that the field is currently facing is the difficulty to reliably measure the local temperature increase in plasmonic systems, a vital information to carry out new investigations in a wider range of applications.

In this presentation, I will first introduce a thermal microscopy technique that we recently developed. This technique, based on optical wavefront sensing measurements, cumulates all the advantages required for plasmonic investigations. In particular, it is label-free, it features a sub-micrometric spatial resolution, a 1 K temperature sensitivity, a frame rate of 1 Hz and it is simple to implement. Then, I will detail most of the achievements that this technique enabled us to conduct these in recent years using plasmonic nanoparticles, namely the studies of phase transition (bubble formation), fluid convection, fluid superheating, microscale temperature shaping at will, nanochemistry and thermal biology at the single cell level.

**Mardi 22 septembre 2015 à 11h
Bât 210 – Amphi 1 (2^{ème} étage)
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