

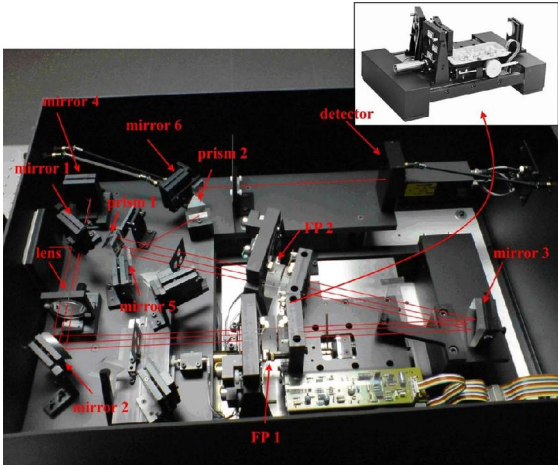
# Spécialité de Master « Optique, Matière, Plasmas »

Stage de recherche (4 mois minimum, à partir de début mars 2012)

**Proposition de stage pour l'année 2011-2012 (ne pas dépasser 1 page)**

Date de la proposition :

<b>Responsable du stage / internship supervisor:</b>	
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<b>Nom du Laboratoire / laboratory name:</b> LPCML	
Code d'identification : UMR CNRS 5620 Site Internet / web site: <a href="http://pcml.univ-lyon1.fr/">http://pcml.univ-lyon1.fr/</a> Adresse / address: Bat A.Kastler, 10 rue Ampère 69622 Villeurbanne cedex, France Lieu du stage / internship place: LPCML, Lyon	Organisme : Université Claude Bernard Lyon1

<b>Titre du stage / internship title:</b> Low Frequency Raman scattering of a single gold nanoparticle
Résumé / summary :
<p>The physical properties of gold particle are modified compared to the bulk when its size is reduced down to the nanometer scale. One of the most interesting properties of such nanoparticle (NP) is the generation of large electromagnetic field in the vicinity of the surface known as localized surface Plasmon. This property depends on the morphology of the NP, i.e. size and shape, and on the surrounding medium. Using laser excitation one may probe the vibration of the particle. The frequency of these acoustic vibrations (down to a few GHz) also depends on the morphology and surrounding medium but also on the cristallinity of the NP.</p> <p>The aim of the work will be to use micro-Brillouin spectroscopy (Fabry Perot Tandem (Fig.)) for studying the acoustic vibration of a single gold NP, and especially the coupling between localized surface Plasmon and acoustic vibration. The student will learn experimental setups (detection and localization of the NP) and many physical concepts (localized surface Plasmon, acoustic vibration, Rayleigh scattering, optical resolution limit). The development of this technique opens a new route for the vibrational characterization of nano-objects. This work may be continued as a PhD work.</p>

<b>Toutes les rubriques ci-dessous doivent obligatoirement être remplies</b>

<b>Ce stage pourra-t-il se prolonger en thèse ? Possibility of a PhD ? : Yes</b>	
<b>Si oui, financement de thèse envisagé/ financial support for the PhD: contrat doctoral MESR</b>	
Lasers et matière	Lumière, Matière : Mesures Extrêmes
Optique de la science à la technologie	Plasmas : de l'espace au laboratoire

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