

# 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>	
Nom / name: Gourdon	Prénom/ first name : Catherine
Tél :01 44 27 46 29	Fax : 01 43 54 39 82
Courriel / mail: <a href="mailto:gourdon@insp.jussieu.fr">gourdon@insp.jussieu.fr</a> , <a href="mailto:thevenard@insp.jussieu.fr">thevenard@insp.jussieu.fr</a>	
<b>Nom du Laboratoire / laboratory name:</b>	
Code d'identification :UMR 7588	Organisme :Institut des Nanosciences de Paris (CNRS, UPMC)
Site Internet / web site: <a href="http://www.insp.jussieu.fr/">http://www.insp.jussieu.fr/</a>	
Adresse / address: 4 place Jussieu, 75005 Paris	
Lieu du stage / internship place: tower 22-23-206, Jussieu Campus	

<b>Titre du stage / internship title:</b> <b>Ultra-fast manipulation of magnetization using femtosecond laser pulses in nanometric layers of ferromagnetic semiconductors</b>
Résumé / summary
<p>This experimental internship proposes to study the interaction of ultra-fast laser pulses with the magnetization of a promising family of materials: magnetic semiconductors. It will allow the student to develop strong experimental skills using lasers, as well as acquire an excellent background of magnetism knowledge.</p> <p>In dilute magnetic semiconductors, the ferromagnetism stems from the exchange interaction between the carriers and the magnetic ions (Mn). This duality makes these materials particularly attractive, as it opens the possibility of using all the experimental techniques developed for semiconductors to investigate their magnetic properties.</p> <p>In particular, ultra-fast light pulses can be used to excite the carriers-magnetic ions system over a few hundreds of femto-second ("pump" pulses), and observe the resulting dynamics of the magnetization ("probe" pulses) – magnetization precession, flipping of the magnetization, or ultra-fast demagnetization – which all depend in a complex manner on the magnetic characteristics of the layers, but also of the polarization, power etc. of the light pulses.</p> <p>During this internship, we will optimize the existing set-up and obtain first results on the dynamics of magnetization on nanometric layers of (Ga,Mn)(As,P) or (Ga,Mn)As.</p> <p>See more information on the group's activity at: <a href="http://www.insp.jussieu.fr/Semiconducteurs-magnetiques-dilues.html">http://www.insp.jussieu.fr/Semiconducteurs-magnetiques-dilues.html</a></p>

<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: Ecoles Doctorales, application deadline in June 2012</b>			
Lasers et matière	<b>x</b>	Lumière, Matière : Mesures Extrêmes	<b>x</b>
Optique de la science à la technologie		Plasmas : de l'espace au laboratoire	

*Fiche à transmettre (fichier pdf **obligatoirement**) sur le site <http://stages.master-omp.fr>*