Spécialité de Master « Optique, Matière, Paris »

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

Proposition de stage

Date de la proposition : 23.10.2015

Responsable du stage / *internship supervisor*:

Nom / *name*:	Fillion	Prénom/ *first name* : Jean-Hugues
Tél :	0144279605	Fax : 0144277033
Courriel / *mail*:	Jean-hugues.fillion@upmc.fr	

Nom du Laboratoire / *laboratory name*: LERMA

Code d'identification : UMR 8112 Organisme : CNRS-UPMC-Observatoire de Paris

Site Internet / *web site*: http://lerma.obspm.fr/spip.php?article47

Adresse / *address:* 4 place Jussieu, 3, Paris 5eme

Lieu du stage / *internship place*: Campus Jussieu, Tour 32-32, 3ème étage

Titre du stage / *internship title*: **Photon Stimulated Desorption from Cold Surfaces**

Résumé / *summary*

UV Photon Stimulated Desorption of neutral and ionic species from cold surfaces is playing an important role in astrophysics media and in cryogenic parts of accelerators, such as the superconducting magnets of the Large Hadron Collider (LHC) at CERN or in use at synchrotron radiation facilities. Modeling this process needs to be supported by fundamental studies in the laboratory.

Experimental investigations at LERMA are performed within a new ultra-vacuum analysis chamber ("SPICES 2"), where thin molecular films can be grown on various surfaces (graphite, Au, technical surface NEG) and irradiated in the Vacuum-Ultra-Violet (VUV) energy range ($\lambda < 200$ nm) thanks to two kinds of monochromatic sources : tunable state-of-the-art synchrotron beam line or pulsed tunable LASERS.

During the internship, the student will contribute to the development of the experimental set-up with the aim to perform two-color pulsed LASER beams experiment. A first VUV laser beam produced by frequency tripling from a dye laser will be focused on the cold surface at selected energies to induced the molecular desorption. A second laser beam generated from an OPO tunable laser (201– 1750 nm) with be focused in front of the surface with the aim to characterize the quantum states of molecules that are ejected from a cold surface (T=10 K). Analysis through Resonance Enhanced Multiphoton Ionisation (REMPI) spectroscopy will be made.

Depending on the timetable, an important part of the work might be devoted a measurement campaign on the DESIRS beamline at the French synchrotron facility SOLEIL (St Aubin). In this case, the whole experiment will be transported to SOLEIL for recording photon stimulated desorption spectra between 7 and 20 eV.

The training will be supervised by Jean-Hugues Fillion and Mathieu Bertin.

Ce stage pourra-t-il se prolonger en thèse ? *Possibility of a PhD* **? : YES**

Si oui, financement de thèse envisagé/ *financial support for the PhD***: CERN**

Lumière, Matière, Interactions	**X**	Lasers, Optique, Matière	**X**

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