Spécialité de Master « Optique, Matière, Paris »

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

Proposition de stage (ne pas dépasser 1 page)

Date de la proposition :

Responsable du stage / *internship supervisor*:

Nom / *name*:	Peretti /Lampin	Prénom/ *first name* :	Romain / Jean-François
Tél :	+33 32 019 78 76	Fax :	
Courriel / *mail*:	romain.peretti@iemn.univ-lille1.fr / jean-francois.lampin@isen.iemn.univ-lille1.fr		

Nom du Laboratoire / *laboratory name*: IEMN

Code d'identification :UMR 8520 Organisme : CNRS

Site Internet / *web site*: www.iemn .fr

Adresse / *address:* Avenue Henri Poincaré, 59491 Villeneuve-d'Ascq

Lieu du stage / *internship place*: Avenue Henri Poincaré, 59491 Villeneuve-d'Ascq

Titre du stage / *internship title*: Biophotonics Metasurfaces Enhanced TeraHerzt Spectroscopy

Résumé / *summary* : ***TeraHertz*** (THz) science and technology are nowadays growing fields and shown results impacting from physics and chemistry up to biology and medicine. Specifically, time domain spectroscopy (TDS) opened the path to detection sensing and analysis of most of the compounds of life, vitamin, DNA, RNA and proteins even enabling specific signature for each conformation. Still, this field has just begun and performances of system need to be improved.

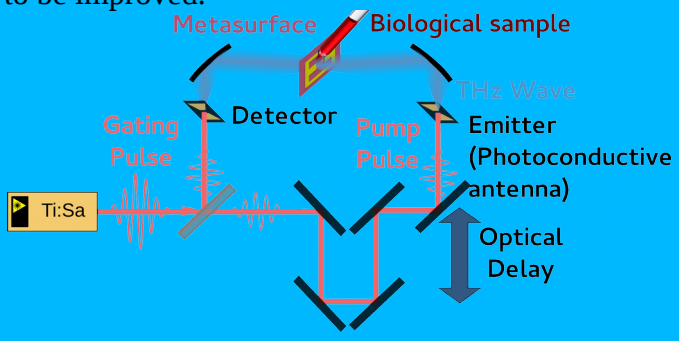

Figure 1 : Schematic of metasurface enhanced time domain spectroscopy experiments

In this training, the student will design/elaborate/use material with subwavelength structures so called ***metasrufaces*** to enhance light matter interactions. The subsequently improved performances of the THz spectroscopic TDS system will allow more precise measurements of the targeted biomolecules.

The student will be hosted by the Photonics TeraHertz group of IEMN CNRS institute in Villeneuve d'Asq (close to Lille, France). He/She will participate in the launching of a new activity: ***TeraHertz Biophotonics.***

We are looking for physics or engineering master student or equivalent. Having of the following skills would greatly increase the chance of success of any application:

- Photonics simulation
- Clean Room technology
- Optical experiments
- Good,mathematical background

The exact tasks in which the student will be involved will be discussed together with him/her and the team and will depends on its capacities and taste as the needs of the team.

Keywords: TeraHertz, Time domain Spectroscopy, metamaterial, biophotonics

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***: several funding proposals have been submited (JCJC / regional grant) but can indeed not be taken for granted**

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