

# Spécialité de Master « Optique, Matière, Plasmas »

Stage de recherche (4 mois minimum, à partir de début mars 2011)

**Proposition de stage pour l'année 2010-2011 (ne pas dépasser 1 page)**

Date de la proposition :

<b>Responsable du stage / internship supervisor:</b>			
Nom / name:	WANG and DINH	Prénom/ first name :	Qijie and Xuan Quyen
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Courriel / mail:	qjwang@ntu.edu.sg		
<b>Nom du Laboratoire / laboratory name:</b> CINTRA			
Code d'identification :	UMI 3288	Organisme :	CNRS/Nayang Technological University /Thalès
Site Internet / web site:	<a href="http://cintra.ntu.edu.sg">http://cintra.ntu.edu.sg</a>		
Lieu du stage / internship place:	Singapour		

<b>Titre du stage / internship title:</b> <b>2D Optical Microcavities in Nanoscale Structures</b>
<p>Light control is a fundamental science that has attracted a lot of attention from various research communities. Optical microcavity has been considered as a promising platform for the control of light due to its demonstrated advantages including ultra-small size, high quality factor, capabilities of storing photons for long periods of time, enhanced nonlinearities, and so forth. Other than the material used, the shape of the microcavity can be used as a design parameter to control the properties of light. Although one dimensional (1D) optical microcavity has been successful, research on designing the shapes of two-dimensional (2D) optical microcavities is more promising as the light can be confined, guided, and manipulated in a more flexible way resulting in more functions.</p> <p>This project aims to experimentally investigate 2D deformed optical microcavities [1] to study the far-field and spectral properties of light emissions. The quantum cascade (QC) structure [2], an artificially fabricated nano-scale semiconductor heterostructure material system, will be employed as a promising gain material to demonstrate the concept as it has various advantages, such as the unipolar characteristics.</p> <p>The highly motivated candidate is expected to have some knowledge in lasers, optics and photonics, semiconductor physics, and microfabrication. After completing the challenging project, the candidate will gain extensive experience on semiconductor micro fabrication, electrical and optical characterization of semiconductor devices/lasers, and fundamental physics behind it.</p> <p>C. Yan, et al. APL, 94, 251101 (2009). N. Yu, et al. Nature Photonics, 2, 564 (2008).</p> <p>Minimum duration of internship: 5 months Candidates are kindly advised to send by email to <a href="mailto:dbaillargeat@ntu.edu.sg">dbaillargeat@ntu.edu.sg</a> , with mail subject "CINTRA_2011_Internship" followed by the candidate's full name, the following documents (in English) - CV (including education &amp; professional history) - Letter of Motivation including your possible contribution to the project</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 ? : oui</b>			
<b>Si oui, financement de thèse envisagé/ financial support for the PhD:</b>			
Lasers et matière	X	Lumière, Matière : Mesures Extrêmes	X
Optique de la science à la technologie	X	Physique des plasmas	

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