

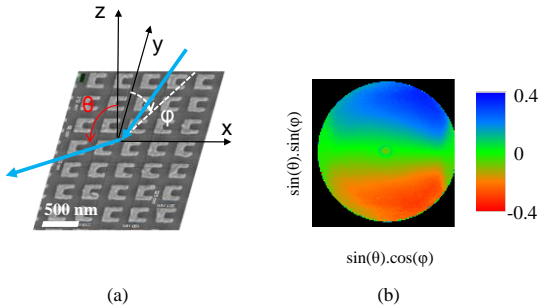
Spécialité de Master « Optique, Matière, Paris »

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

Proposition de stage

Date de la proposition : 28/09/2016

Responsable du stage / internship supervisor:			
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Nom du Laboratoire / laboratory name: INSP			
Code d'identification :	UMR7588	Organisme :	UPMC / CNRS
Site Internet / web site:	www.insp.upmc.fr/Proprietes-optiques-de,1153.html http://www.insp.jussieu.fr/-Nanophotonique-et-optique,158-.html		
Adresse / address:	4 place Jussieu / Paris		
Lieu du stage / internship place:	tour 22-32		

Titre du stage / internship title: Enhancement of optical activity in metallic nanostructures for the detection of biomolecules.
Résumé / summary The enhancement of the optical properties associated with localized surface plasmon resonances in metallic nano-objects find numerous applications in nanophotonics. The fabrication capabilities allow now to elaborate nanostructures with complex shapes and new original properties can be engineered. In particular, it has been shown that resonators exhibiting optical activity may be used to concentrate a chiral local field. This property may be used to exacerbate the sensitivity of detectors to biomolecules based on the measurement of circular dichroism. Circular dichroism is defined as the reflectivity difference between right and left circular polarizations. We have observed this effect in arrays of U-shaped plasmonic resonators (a) where the circular dichroism depends on the direction of propagation φ (b). We are now aiming at using this effect to detect chiral biomolecules. During the internship, samples will be realized by e-beam lithography in the clean room of the INSP. The functionalization of the samples with test emitting molecules will be developed using soft chemistry methods associated with lithography. The emission properties (directivity, polarization...) of the test molecules coupled with the resonators at the plasmon resonances will be investigated. This will allow probing the strength of the coupling between the resonators and molecules as well as the near-field properties of the resonators. These results will be the starting point of a larger work leading to the deterministic functionalization with chiral biomolecules and their detection which could be developed during a PhD thesis.


Ce stage pourra-t-il se prolonger en thèse ? Possibility of a PhD ? : oui/yes			
Si oui, financement de thèse envisagé/ financial support for the PhD: ED			
Lumière, Matière, Interactions	x	Lasers, Optique, Matière	x

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