

Proposition de stage/ Internship proposal

Date de la proposition :

Responsable du stage /			
Nom / name:	Witkowski	Prénom/ first name :	Nadine
Tél :		Fax :	
Courriel / mail:	Nadine.witkowski@upmc.fr		
Nom du Laboratoire / laboratory name: Institut des NanoSciences de Paris (INSP)			
Code d'identification : UMR7588	Organisme : Sorbonne Université, CNRS		
Site Internet / web site: https://w3.insp.upmc.fr			
Adresse / address: 4 place Jussieu, 75005 Paris, France			
Lieu du stage / internship place: 4 place Jussieu, 75005 Paris, France			

Titre du stage / internship title: Structural and electronic properties of a new class of organic semi-conductors for flexible electronics

Résumé / summary

Flexible electronics is a promising emergent technology for electronic devices that is an alternative to the dominant silicon one. Based on organic materials, the technology bring the possibility to engineer cost-effective, light, flexible and even stretchable electronic devices that can be integrated in a vast variety of connected object.

The development of flexible electronics requires a fundamental understanding of the electronic properties of the organic materials in relation with their ordering. In such context, the objective of the internship is to study a new class of pentacene-like molecules that is expected to revolutionize the field because of its better stability and easily integration in flexible devices.

The aim of the internship will consist in characterizing how the organization of the molecules in thin films influences the electronic structure of the valence band and the local conductivity at the surface. The new-class of molecules are synthesized in Bordeaux and samples of thin molecular films will be prepared in Toulouse through a national collaborative project (ANR Mobinacene). Electron spectroscopies (XPS/UPS) will be used to characterize the electronic structure of the valence band , multi-mode force atomic microscope will be achieved to map the local conductivity of the molecular films, X-ray diffraction will be done to quantify the ordering in the

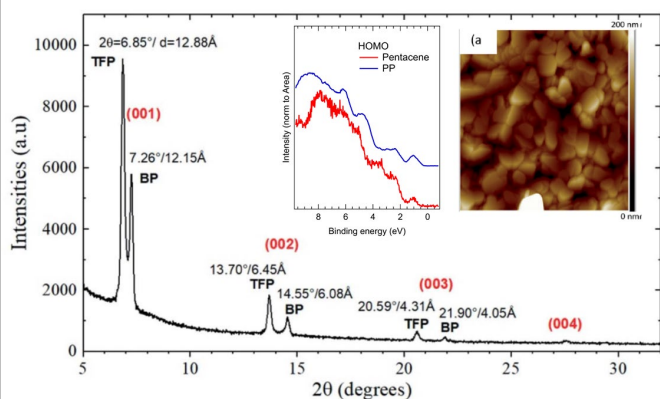


Figure 1: Diffraction, valence band, AFM of molecular films

film. All the measurements to characterize thin films will be done at INSP, optional device characterization (OFET) will be done in Toulouse during short-term mobility.

Techniques/methods in use: photoelectron spectroscopy, scanning force microscopy and relative techniques, diffraction

Applicant skills: physics background and taste for experiments using various techniques

Ce stage pourra-t-il se prolonger en thèse ? Possibility of a PhD ? : NO but engineer contract 6 to 12 months is possible

Si oui, financement de thèse envisagé/ financial support for the engineer: ANR already funded