

POST-DOC POSITION

Topic: *Development of nanocomposite vapour sensors for fruit juice degradation monitoring*

The "Smart Plastics" research group belongs to the "Institut de Recherche Dupuy de Lôme" (IRDL CNRS 6027), at the "Université de Bretagne Sud" (UBS) is offering a 18 months funded post-doc position in the field of nanocomposite sensors development.

Description of the project: the "*SenseVOC*" project aims at providing a novel analytical tool able to prevent fruit juice degradation and associated health issues. The chosen strategy is based on the detection of volatile organic compounds (VOC), that are biomarkers of bacteria development responsible for food alteration.

The host team has a recognized experience in the development of quantum resistive vapour sensors (vQRS) based on the formulation of conducting polymer nanocomposites (CPC). The performances of these sensors result from their fabrication by spray layer by layer, allowing the control of the nanocarbon based conductive architecture and their adjustable selectivity with functional polymers.

The project will be carried out in close collaboration with Prof. Emmanuel COTTON's microbiology group specialised in bacteria development analysis, like those responsible for undesirable aromatic tastes in drinks. The researchers from LUBEM at "Université de Bretagne Occidentale", in Brest will provide the samples of VOC biomarkers to be targeted in order to make an early diagnosis of alteration.

Main Activity: The work consists in adapting the standard conductive polymer nanocomposite formulations to the specificity of the new target molecules through a judicious choice of compounds and processing conditions. The selectivity of the resulting CPC transducers is then tested in a training round, followed by their assembly into an e-nose able to classify the vapours of interest. A new automated detection device currently being finalised will be used to generate a large amount of data that should enable real-time diagnosis of fruit juice spoilage in the future.

Keywords: Physical chemistry of polymers, Nanocomposites, Sensors, Data treatment, Bacteria, Diagnosis, Food alteration.

Candidate Profile: The candidate must have a Ph. D. in Physical Chemistry of Polymers, including formulation and characterization. Additional skills in sensors and data treatment would be appreciated.

Work life environment: IRDL is a CNRS habilitated University research lab with more than 100 permanent researchers working in the field of materials engineering. Lorient is a small but beautiful coastal city in the Brittany region of France. The cost of living is lower than the average index of France.

Application procedure: Interested candidates can send their CV, cover letter and recommendations to :

Prof. Jean Francois FELLER (jean-francois.feller@univ-ubs.fr)
and Dr. Mickael CASTRO (mickael.castro@univ-ubs.fr).