PhD offer (36 months):
Development of smart food packaging based on molecularly imprinted polymers to track food oxidation

The aim of this project is to design "smart" packaging that can inform the consumer or the retailer about the quality and freshness of a food in real time. The approach that will be implemented for the development of these packaging is highly original and could lead to a breaking innovation. It is based on the interaction between a food quality marker and a molecularly imprinted polymer (MIP) that will be included in the packaging.

The work of the PhD will consist in designing new MIPs for selectively capturing oxidative markers from food. Then, the MIP will be coupled to a probe capable of changing its light transmission properties following interaction with the quality marker. The combination of the MIP & the photo-probe will be included in a packaging film. Such change will inform the consumer or the retailer about the quality of the food product. Before testing on food products, the safety of the system as a food contact material will be critically assessed.

This project is thus at the interface of several current problems facing the agri-food industry: the fight against food waste, the guarantee of healthy food products and the development of intelligent systems capable of informing the consumer. This project is also at the interface of different science fields: analytical chemistry, synthesis, material science and food science.

The research project will be carried out in AgroSup Dijon / University of Burgundy, at UMR PAM, within the research team Physical Chemistry of Food and Wine (http://www.umr-pam.fr/fr/equipes-de-umr-pam/papc.html). The team coordinating this project will gather different competencies for this innovative project, from the synthesis of new molecularly imprinted polymers to the design of safe and intelligent packaging for application to food products.

Knowledge and skills required:

The candidate must have good knowledge in chemistry (organic chemistry, synthesis), polymer chemistry or material science and good notions in analytical chemistry and physical chemistry, with a strong interest for their application in the field of food science and food packaging. Good ability in team work will be necessary.

Language: French or English (French not mandatory)
Salary: 1940 Euros / month (gross salary) ; 1560 Euros / month (net salary)
Duration: 3 years, starting date 2nd September 2019
Qualifications: Master degree (or equivalent)
Address Host Laboratory: UMR PAM, PCAV team, AgroSup Dijon, 1 Esplanade Erasme, 21000 Dijon, France
Contact: Prof. Thomas KARBOWIAK ; thomas.karbowiak@agrosupdijon.fr
Applications open until 15th June 2019 (interviews and selection until early July).

Please send the following documents (all in one PDF file) by e-mail to: thomas.karbowiak@agrosupdijon.fr

1) For EU candidates: Copy of your national ID card or of your passport page where your photo is printed.
   For non-EU candidates: Copy of your passport page where your photo is printed.

2) Curriculum Vitae (1 page).

3) Letter of motivation relatively to the position (1 page).

4) Copy of your Master degree and/or Engineer degree if already available.

5) Copy of your final marks and ranks.

6) Coordinates of reference persons (maximum 3, at least your master thesis supervisor): Title, Name, organization, e-mail.

If you have questions regarding the application, please contact the supervisor.