



Post-Doctoral Position 24 months



Setting new standards for dairy powder functionality

Laboratoire d'Ingénierie des Biomolécules – LIBio Nancy – France
Laboratoire de Chimie Physique et Microbiologie pour l'Environnement – LCPME Nancy – France

Hydration characteristics of dairy powders are very important as it is by their full rehydration that the functional and/or nutritional characteristics of the components can be obtained. Furthermore, poor rehydration properties can impact process efficiency and increase the operational costs of powder applications downstream. It is therefore of industrial interest to produce powders with top functionality which can be maintained throughout the powder's life.

It is now generally accepted that **particle surface composition** has a strong impact on the functional properties of a powder, such as rehydration, caking and flowability as it constitutes the part of the powder particle that directly interacts with the environment. Consequently, monitoring only the bulk properties of a food powder during the production process is not enough to ensure product quality.

The focus will be done on particle surface characterisation with the use and the development of surface methodologies. For this purpose, the powder surface will be investigated by atomic force microscopy (topography, nanoindentation, chemical forces...), x-ray photoelectron spectroscopy (surface atomic and chemical composition), microscopies (confocal, electron...). These results will be related to powder functionality (wetting, solubility...) and powder physico-chemistry properties (protein denaturation, lactose crystallisation).

Expected skills:

- Excellent skills in atomic force microscopy, and more generally biophysics techniques
- Expertise in food physicochemistry and/or food powders also be appreciated
- Management skills as the candidate will have to work with a technician and to manage experiments, planning, presentations, meeting
- fluent in English (written, spoken)
- Ability to work between two laboratories and two different scientific communities

Starting time: January 2019, duration 24 months

Type of funding: industrial

Project leader:

Pr. Claire GAIANI - Membre de l'Institut Universitaire de France
Université de Lorraine - LIBio – Laboratoire d'Ingénierie des Biomolécules, 2 avenue de la Forêt de Haye -
BP 20163, 54505 Vandoeuvre-lès-Nancy - FRANCE
Tél. : +33(0)3 72 74 41 11 - Fax : +33(0)3 83 59 57 72
claire.gaiani@univ-lorraine.fr

Researchers strongly implicated in the project: Jennifer.burgain@univ-lorraine.fr ; sofiane.el-kirat-chatel@univ-lorraine.fr ; gregory.francius@univ-lorraine.fr