

Id: 1602

425 Professor Maud Langton

Diarienummer: SLU ua 2019.2.5.1-2015

Post.Doc. Food structure

Department of Molecular Sciences

Duties:

SLU seeks a highly motivated researcher for a 2 year post-doc in food microstructures. The position has its base at the Department of Molecular Sciences, the food science unit. The department generates and conveys vital information about food composition and properties and its importance to our health. This is done in close collaboration with other researchers and stakeholders in the food chain, nationally and internationally. The department offers a creative and stimulating international environment, and is part of Uppsala BioCenter, a strong research environment for basic and applied research.

The research and education focuses on food composition and follows the food chain via preparation and processing of the raw materials. The composition, quality (sensory, health, safety) and functionality of food are considered in relation to primary production, processing for the interests of the individual consumer. The microstructure is affected by the physical and chemical environments and processing conditions. In this work the impact of microstructure on quality properties such as texture, barrier and release properties, etc. is of interest.

Duties: to develop methods for rheological and mechanical characterization, and relate these properties to the structure. This will involve both at mesoscale level by using confocal or light microscope and at ultrafine structure level by using atomic force microscope and electron microscope, and scattering techniques. The objective is to develop new techniques for microscopy in food applications as well as to evaluate the effect of various processing techniques (such as extrusion, spinning, 3-D printing) on the structure.

The main financing comes from a Formas project, where Faba beans is selected as a model 'novel' legume to characterize protein gel formation. Methods for extraction of proteins from faba beans will be compared and optimized for composition and yield. Faba proteins are fractionated and tested singly and in combination, in various conditions, to characterize gelation properties by rheology and microscopy (light, confocal, electron). Gel strength and elasticity will be correlated with microstructure. To simulate extracts from whole beans, gelation of faba proteins is then tested in mixtures with starch and fibres. Finally, the impact of adding fats to form emulsion gels is also studied. Understanding the molecular mechanisms of gelation supports the streamlined design of novel foods based on faba and other non-soy legumes – greatly improving current empirical (trial-and-error) product development. Methodologies developed here are a pipeline to characterize other plant-derived proteins to be used in novel foods.

In addition the candidate is expected to teach and supervise student projects within biophysics

Qualifications:

The candidate should have a strong background in structural characterization of materials preferably food. Additionally, knowledge in mechanical characterization is appreciated. Knowledge on food processing techniques (extrusion, emulsification, 3-D printing etc) is valued. PhD degree in the area Physical Chemistry, Colloid Science, Soft Condensed Matter, Biophysics, Food Science or related field. Proven skills in both oral and written scientific English are required. Experience from supervising students is a merit.

Place of work:

Uppsala

Form of employment:

The position is limited to two years.

Extent:

100%

Starting date:

Latest as soon as possible

Application:

We welcome your application no later than 2019-06-24, use the button below.

Academic union representatives:

<https://internt.slu.se/en/my-employment/employee-associations/kontaktpersoner-vid-rekrytering/>

The Swedish University of Agricultural Sciences (SLU) develops the understanding and sustainable use and management of biological natural resources. The university ranks well internationally within its subject areas. SLU is a research-intensive university that also offers unique degree programmes in for example rural development and natural resource management, environmental economics, animal science and landscape architecture. SLU has just over 3,000 employees, 5,000 students and a turnover of SEK 3 billion. The university has invested heavily in a modern, attractive environment on its campuses in Alnarp, Umeå and Uppsala. www.slu.se SLU is an equal opportunity employer.

Kontaktperson:

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