

Beca Predoctoral amb Càrrec a Projecte
Beca Predoctoral con Cargo a Proyecto
Graduate Student Assistantship

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Barcelona, Spain*

Research Area: Food Process Control

Project: “Development of an optical backscatter sensor for determining thermal denaturation of whey proteins during milk processing”. Proposal N° 268281 – “DenatureProbe”. **FP7-PEOPLE-2010-RG.**

Brief summary and objective: The heat denaturation of whey proteins impacts the functional properties of milk. After denaturing, β -lactoglobulin (β -LG) associates with κ -casein (κ -CN), a protein located in the surface of the casein micelle. This association significantly impairs milk coagulation by creating a steric obstacle for κ -CN hydrolysis –a critical phenomenon initiating coagulation– and by increasing the gel moisture retention. Correlations of the degree of β -LG denaturation to gelation time, gel firmness, and gel moisture content have been widely documented. The resulting high moisture and soft gels are undesirable for cheese manufacture but advisable in yogurt processing, as it aids in preventing one of its most frequent defects, wheying-off. Early prediction of the potential gelling strength of milk will allow milk batches to be used for their most suitable purposes. The goal of this project is the development of an optical sensor technology for inline determination of β -LG denaturation and subsequent association with κ -CN during milk heat treatment. The economical impact this would have on the dairy industry, in addition to the non-existence of a simple method of protein denaturation measurement, motivates this research.

Initial appointment: Full time graduate student position. Two options depending on qualification of candidates: a) One-year MS Program + Three-year PhD program, or b) Four-year PhD program. The position will consist of a two-year fellowship (12371 euros –gross per year) and a two-year contract (17381 euros –gross per year). The candidate will enroll in the official MS and/or PhD programs offered by the Department of Animal & Food Science. Enrollment fees will be covered by the grant. For more information of the Master and PhD programs:

Master Program

<http://www.uab.cat/servlet/Satellite/studying/official-master-s-degrees/general-information/research-in-animal-and-food-science-1096480962610.html?param1=1204531804437>

PhD program

<http://www.uab.cat/servlet/Satellite/postgraduate/phd-s/all-phd-programmes/general-information/food-science-1233731024065.html?param1=2010¶m2=1090573141676>

Qualifications: The successful candidate must have a B.S. degree in agricultural engineering, food engineering, food science or related area. Laboratory experience and expertise in data analysis and statistics is desirable. Expertise in some of the following areas is preferred: applied mathematic to engineering, rheology, chemical kinetics, and cheese processing. Selection of candidates for an interview will be performed based on a letter of application, curriculum vitae, transcripts, and two reference letters.

The official opening for this position is expected by October 2010

Direct inquires to:

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