Applications are invited for a research studentship in the interdisciplinary field of Mechanics of Materials and Tribology, leading to the award of a PhD degree. The post is supported by a bursary and fees (at the UK/EU student rate) provided by the EPSRC in collaboration with Nestlé, the world’s largest food manufacturer and the leading Nutrition, Health and Wellness Company. As a Nestlé PhD student, you will be part of a community of students based at top UK and overseas universities. To complement your university-based research training, Nestlé will offer soft skills and industrial training that will enhance your readiness for employment. As part of this training a 3-6 months placement at the Nestlé centre in York, spread over the course of the PhD will be offered. A £3,500 annual supplement to the standard stipend will also be provided. This studentship is open to UK or EU students only. The project will start on 1 October 2016 or earlier and it will run for four years.

Oral processing of food is very complex and includes mechanical degradation of food and tribological interaction with the oral surfaces (tongue, palate, tooth). The sensory perception of many food attributes, for example creaminess, smoothness and astringency is related to forces experienced in the mouth during eating. The development of new foods with reduced sugar or fat which deliver the expected mouth-feel attributes is an important goal for the food industry. However at present we know very little about the mechanisms of mechanical degradation of food or resulting changes to friction experienced in the oral environment. Thus it is very difficult to make predictions of the behaviour of processed food in mouth and develop new products with enhanced mouth-feel.

The aim of the research will be to develop novel experimental methods and modelling techniques for assessing the influence of product structure on the different steps involved in oral perception. Soft solid systems will be studied in order to develop models predicting mechanical breakdown during oral processing, taking into account the complex interaction of the food components with the mouth surfaces. This research field is far away from traditional engineering applications; however it is a novel application of mechanics to research and has the potential to deliver state of the art techniques that can truly transform food product design.

You will be an enthusiastic and self-motivated person who meets the academic requirements for enrolment for the PhD degree at Imperial College London. You will have a 1st class honours degree in mechanical engineering or a related subject, and an enquiring and rigorous approach to research together with a strong intellect and disciplined work habits. An interest in Mechanics is essential. Good team-working, observational and communication skills are essential.

To find out more about research at Imperial College London in this area, go to: http://www3.imperial.ac.uk/mechanicalengineering

For information on how to apply, go to: http://www.imperial.ac.uk/mechanical-engineering/study/phd/how-to-apply/

For further details of the post contact Dr Maria Charalambides, m.charalambides@imperial.ac.uk, +44 (0)20 75947246. Suitable candidates will be required to complete an electronic application form at Imperial College London in order for their qualifications to be addressed by College Registry.

Closing date: 27 March 2017
Imperial Managers lead by example.

Committed to equality and valuing diversity. We are also an Athena SWAN Silver Award winner, a Stonewall Diversity Champion, a Two Ticks Employer, and are working in partnership with GIRES to promote respect for trans people.