



**PhD Scholarship available in Soft Matter/Food
Emulsions
Wellington, New Zealand
Available immediately**

Interfacial engineering and properties of food emulsions

Emulsions can be found in a range of environments (from the synthetic to the natural worlds) and in particular are used in many commercial areas (paints, cosmetics and the food industry). In their simplest form they are mixtures of two immiscible liquids (i.e. oil and water) stabilised by a third ingredient; an emulsifier (protein, lipid, colloidal particle). Food emulsions are more complex than this, with both lipids and proteins acting to stabilise the oil/water interface. Moreover often a mixture of oils is present. Whether simple or complex, emulsions are kinetically rather than thermodynamically stabilised systems, having time-varying characteristics and the ability for states to be readily altered by external means. As such, physical characteristics of emulsions such as life time, texture, and mode of destabilisation can all be modified by changing the chemical functionality of for example the lipids and proteins used as emulsifiers and/or by altering the method of fabrication. Furthermore the physical and chemical nature of the emulsion may alter the way that the emulsion behaves during digestion.

This PhD programme will focus on determining the physical characteristics of food emulsions using techniques such as light scattering, rheology, optical tweezers, cryo-electron microscopy and optical techniques. Particular focus will be placed on manipulation of the interfacial region between the oil and water as a way of altering the physical properties of the emulsion and thereby its behaviour in the mouth and during digestion.

Non-native English candidates must have an appropriate English qualification (TOEFL, IELTS or Cambridge).

Scholarship: \$25 000 NZD plus fees, funded through The Riddet Institute, a New Zealand Centre of Research Excellence.

Contact

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