

Location:	Auckland, New Zealand
Duration:	3 years
Scholarship:	\$25 000 per year (fees also covered)
Application due:	1 April 2018
Requirements:	≥ 7.5 GPA
Additional information:	Dr Emilia Nowak (e.nowak@massey.ac.nz)

PhD scholarship: Fluid dynamics at the interfaces

We are seeking a person with a passion for fluids mechanics to undertake experimental research of multiphase flows. This project will be funded by a MARSDEN Fund, based in Massey University (Auckland) and University of Auckland, with the experience/work with world-leading scientists from University of Birmingham or Imperial College London (Chemical Engineers).

PROJECT DETAILS: The experimental work will involve application of optical diagnostics (high-speed camera) to image fluid deformation, droplet rupture, coalescence and interface topology in liquid-liquid and gas-liquid systems to obtain flow features where interfacial flows, diffusion, convection, surfactant adsorption/desorption and polymerisation reaction are all involved. Surfactants and polymers are frequently used to modify the chemistry of liquid surfaces that enables control the structure, stability and flow multiphase systems. An additional focus is the creation of novel duplex droplet structures which can be exploited by industry.

The fundamental transport phenomena investigated in this project cover the core the immiscible interfaces of the gas/liquid, liquid/liquid central to oil industry, but also the poorly understood miscible liquid/liquid interfaces. Project also involves close cooperation with numerical simulation person.

REQUIREMENTS: The successful candidate will have an Honours or Master's degree in a relevant discipline with a GPA ≥ 7.5 . Relevant disciplines include Chemical Engineering and Physics with a component on Fluid mechanics.

SUPERVISORS: Dr Emilia Nowak (chemical engineer in MIFST), Dr Geoff Willmott (physicist from Dynamic Microfluidics Laboratory at the University of Auckland), Dr Catherine Whitby (physical chemist, Institute of Fundamental Sciences at Massey University).

LOCATION: Massey University's College of Sciences' world-leading scientists are internationally-acclaimed and ranked. You will gain expert guidance from our internationally-recognised researchers. Consistent processes across the university help build a culture of empowerment and ownership. The Massey University Institute of Food Science and Technology (MIFST), brings together the activities of the School of Food and Nutrition, FoodPilot and Riddet Innovation. University of Auckland has grown to become New Zealand's flagship, research-led university, known for the excellence of its teaching, its research, and its service to local, national and international communities.

Auckland is ranked 3rd in a survey of the quality of life of 215 major cities of the world. Auckland is also known as the "City of Sails", derived from the popularity of sailing in the region (~135,000 yachts) and only ~2h drive from Hobbiton.

<http://www.massey.ac.nz/massey/research/higher-research-degrees/funding-scholarships/doctoral-project-funding.cfm>