

2019/20 PhD Proposal – CSC-NZ-CFPN CRCC Joint Funding Programme

Information to be published on NZ-CFPN CRCC website if proposal is selected	
Project title	Rapid analysis of bacterial viability
Supervisor title and name	Drs Vanholsbeeck and McGoverin
Department	Physics
School / Centre	Faculty of Science
University	The University of Auckland
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Link to Supervisor's research page	https://www.biophotonics-newzealand.com/copy-of-people
Project outline 150-300 words (approx) describing a possible PhD project, which has a link with an existing or potential research partner in China	<p>A significant contributor to food safety is microbial load. Rapid characterization of the microbial load within foods and the processing environment is increasingly important. One important parameter of this characterization is bacterial viability, i.e. are the bacterial cells alive. The fluorescence effect is utilised in many aspects of microbiology, in the Biophotonics laboratory there is a focus on the utilization of fluorescence spectra for the rapid characterization of microbial samples.</p> <p>This PhD project will analyse the utility of viability differentiating fluorophores for the determination of bacterial viability on a population basis. This will involve analyses beyond the standard use of fluorescence peak intensities and will use multivariate statistical and machine learning methods. This PhD project will utilize our own proprietary fluorimeter. The project will be based at the University of Auckland in the Biophotonics lab within the Department of Physics. This lab is well resourced with the state-of-the-art equipment needed for this study.</p> <p>The potential research partner in China for this work is Dr Feng Xu of the Bioinspired Engineering and Biomechanics Center, Xi'an Jiaotong University.</p>
References for further reading (optional)	
Additional information to be used in proposal selection process	
NZCFPN CRCC priority area to which proposal is aligned (see list below)	<ul style="list-style-type: none"> • Advanced diagnostic tools & analytics • Chemometrics
Brief outline of Supervisor's current research links with China or interest in developing them	