

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

Information to be published on NZ-CFPN CRCC website if proposal is selected	
<b>Project title</b>	Analysis of spectral signals from single cells
<b>Supervisor title and name</b>	Drs Vanholsbeeck and McGoverin
<b>Department</b>	Physics
<b>School / Centre</b>	Faculty of Science
<b>University</b>	The University of Auckland
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<b>Link to Supervisor's research page</b>	<a href="https://www.biophotonics-newzealand.com/copy-of-people">https://www.biophotonics-newzealand.com/copy-of-people</a>
<b>Project outline</b> 150-300 words (approx) describing a possible PhD project, which has a link with an existing or potential research partner in China	<p>Several types of bacteria exist where the presence of just an individual cell renders food not fit for consumption or causes the shutdown of a processing environment for cleaning. There is clear benefit in the development of a rapid method for the identification of these species. However, due to the low numbers involved in what is often a noisy background methods for identification often involve a culture step where the number of cells of interest increase. This leads to easier detection but necessitates a period of at least a few hours to allow for cell replication. We are interested in the development of a rapid method for species identification on the single cell basis.</p> <p>This involve the analysis of spectroscopic data collected from single bacterial cells for the development of classification methods to identify bacteria. The project will be based at the University of Auckland in the Biophotonics lab in 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>
<b>References for further reading (optional)</b>	
Additional information to be used in proposal selection process	
<b>NZCFPN CRCC priority area to which proposal is aligned (see list below)</b>	<ul style="list-style-type: none"> <li>• Advanced diagnostic tools &amp; analytics</li> <li>• Chemometrics</li> </ul>
<b>Brief outline of Supervisor's current research links with China or interest in developing them</b>	