

## 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>	Sustainable Bio-based Intervention Approaches for Reducing Microbial Food Spoilage
<b>Supervisor title and name</b>	Dr Kang Huang <sup>1</sup> ; Prof Lijuan Xie <sup>2</sup>
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<b>School / Centre</b>	<sup>1</sup> Faculty of Science; <sup>2</sup> College of Biosystems Engineering and Food Science
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<b>Link to Supervisor's research page</b>	<a href="https://unidirectory.auckland.ac.nz/profile/kang-huang">https://unidirectory.auckland.ac.nz/profile/kang-huang</a> <a href="https://person.zju.edu.cn/0009667#0">https://person.zju.edu.cn/0009667#0</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	Food waste is one of the most significant challenges impacting sustainability, economics, and the nutritional status of food. Microbial spoilage is one of the leading causes for these food losses that significantly accelerates decay of these perishable minimally processed foods. The overall goal of this PhD project is to integrate technological innovations in understanding microbial ecology and controlling growth of spoilage microbes on the perishable minimally processed foods. This research will identify and investigate the source and fate of microbial taxa that contribute to microbial food spoilage from harvest to consumption. The research plan will also develop bio-based intervention strategies (e.g., bio-based antimicrobial formulations [1], bio-based antimicrobial food packaging [2]) to reduce the growth of spoilage microbes and evaluate their impact on microbial spoilage and shelf-life of food. Achieving more than 20% reduction in food loss and waste will bring enormous benefits, including closing the gap between food that will be needed to feed everyone and food available in the next 25 years, improving energy efficiency of the food supply chain and developing innovative economic and behavioural incentives to improve food sustainability, safety and security. The project will be a collaboration between the University of Auckland and Zhejiang University.
<b>References for further reading</b> (optional)	[1] Huang, K., Dou, F., Nitin, N. Bio-based sanitizer delivery systems for improved sanitation of bacterial and fungal biofilms. <i>ACS Applied Materials and Interfaces</i> , 2019, 11(19), 17204-17214. [2] Ma, Y., Li, J., Si, Y., Huang, K., Nitin, N., Sun, G. Rechargeable Antibacterial N-Halamine Films with Antifouling Function for Food Packaging Applications. <i>ACS applied materials &amp; interfaces</i> , 11(19), 17814-17822.
Additional information to be used in proposal selection process	
<b>NZCFPN CRCC priority area to which proposal is aligned</b> (see list below)	<ul style="list-style-type: none"> <li>• Packaging</li> <li>• Food security, including food waste</li> </ul>
<b>Brief outline of Supervisor's current research links with China or interest in developing them</b>	University of Auckland has extensive links with various universities in China. Dr Huang has been collaborating with Zhejiang University for several years in the food processing area. We are very interested in developing new collaboration projects with China on reducing microbial food spoilage and developing novel antimicrobial food packaging materials.