



2027 Summer Research Project

Section	Description
Project title	Investigating Plastic Oligomer Leaching from Food Containers
Hours & delivery	The project will run for six weeks with an expected commitment of 30 hours per week. It will be delivered on campus at Queensland Alliance for Environmental Health Sciences (QAEHS), UQ Dutton Park. Typical working days and hours will be arranged between Monday and Friday in consultation with the student.
About the project (150–250 words)	Plastic materials are used throughout daily life, particularly in food containers and packaging. These food-contact materials provide a direct route through which plastic-related chemicals may enter food and beverages. Specifically, this project focuses on plastic oligomers, small molecules composed of a few of the same repeating building blocks as plastic polymers. They can remain as by-products of plastic manufacturing or form when polymers break down during use and ageing. Because oligomers are much smaller than intact polymers, they may easily migrate from packaging into food or drinks and may be more readily absorbed by the human body. Laboratory and animal studies have suggested that some oligomers can cause adverse biological effects. Therefore, important questions include which types of plastics release oligomers most readily, which oligomer structures are released, and how much migration occurs under common conditions of use. This project will investigate plastic and plastic-coated food containers, such as cups and takeaway packaging. The containers will be tested under simulated everyday-use conditions, including contact with food simulants at different temperatures and for different durations. Released oligomers will then be measured and characterised using advanced analytical techniques. The student's contribution will help identify which food-contact materials release oligomers and under what conditions. The findings will improve our understanding of chemical exposure from food-contact plastics and identify materials that may warrant further investigation.
What you'll do (100–150 words)	The student will start by reviewing the literature on plastic oligomers and selecting a range of plastic and plastic-coated food containers for testing. They will document product information, including material type and intended use, and help design experiments that simulate everyday conditions such as contact with hot water or food simulants, different contact times, and repeated use. Working alongside the research team, the student will conduct controlled leaching experiments, prepare and extract samples, and assist with instrumental analysis using liquid chromatography – tandem mass spectrometry (LC-MS/MS). They will organise and analyse the resulting data to compare oligomer release across products and test conditions. Throughout the project, the student will receive comprehensive hands-on laboratory training and participate in regular research team discussions.
What you'll learn (100–150 words)	The student will gain hands-on experience in studying chemical migration from food-contact materials and develop an understanding of plastic oligomers and their relevance to human exposure. They will learn how to design controlled laboratory experiments, select appropriate food simulants and test conditions, and apply quality-control procedures to produce reliable data. Through sample preparation and LC-MS/MS analysis, they will develop practical skills in chemical extraction, instrumental analysis, data processing, and interpretation.
Project outcomes (75–125 words)	By the end of the project, the student is expected to have generated a structured dataset describing the types and amounts of plastic oligomers released from selected food containers under simulated everyday-use conditions. The student will produce a short written report summarising the study background, experimental methods, and key



	findings, and will also present the findings to the QAEHS microplastic team. The dataset and report will contribute to the broader research program on human exposure to plastic-related chemicals and provide a foundation for follow-up experiments and potential scientific publication.
Who should apply? (75–125 words)	Students with a background in, or strong interest in, organic or analytical chemistry, environmental science, food science, or a related discipline are encouraged to apply. The project would particularly suit students who enjoy hands-on laboratory work and are interested in plastic pollution, food safety, human exposure, or mass spectrometry. Previous laboratory experience would be helpful but not essential, as appropriate training will be provided. Applicants should be careful, reliable, and willing to follow laboratory safety and quality-control procedures.
Team & supervision (75–125 words)	The student will work under the supervision of Dr Jinglong Li, a Postdoctoral Research Fellow at QAEHS, UQ, and will collaborate closely with other students and staff in the microplastics research team. Most project activities will be conducted in the PC2 laboratory in the Susan Tett Building at UQ Dutton Park. The student will join a supportive and collaborative research environment, with regular opportunities to discuss progress and receive guidance. All required personal protective equipment (PPE), laboratory infrastructure, and consumables will be provided, together with access to state-of-the-art analytical instruments for sample preparation and chemical analysis.
Additional opportunities (optional)	The student will have the opportunity to present their findings to the QAEHS research team, receive feedback, and develop confidence in scientific communication. They will gain a deeper understanding of how scientific research progresses from experimental design through to data interpretation. If the project generates high-quality data, the student may be invited to contribute to a peer-reviewed publication, with authorship determined based on their contribution. The experience gained may also support future research opportunities, including Honours, MPhil, or PhD study.
Additional requirements (if applicable)	The student will be required to complete all necessary building and laboratory inductions, as well as mandatory online and in-person training, before commencing the project.
Contact	Yes, students may contact the supervisor before applying. Direct enquiries to: jinglong.li@uq.edu.au