

## Environmental Research, Technology Demonstration and Conference Project

<b>ECF Project:</b>	ECF 2022-36
<b>Project Title:</b>	Environment and Conservation Fund - Development of an energy efficient technology for removal of microplastics from wastewater
<b>Principal Investigator:</b>	Dr Fu Sau Chung, Department of Building Environment and Energy Engineering, The Hong Kong Polytechnic University
<b>Total Approved Grant:</b>	\$495,000
<b>Duration:</b>	1/7/2023 to 30/6/2025
<b>Project Status/Remarks:</b>	On-going
<b>Project Scope:</b>	<p>Plastics are weathered into smaller fragments, called microplastics (MPs) over time. Indiscriminate disposal of plastic waste results in widespread MP pollution. These MPs infiltrate marine ecosystems and threaten sea life, food safety and health. Existing treatment methods like filtration and chemical coagulation suffer from low removal efficiency, the necessity of environmentally harmful additives and/or energy intensive.</p> <p>The project team proposes a non-invasive, non-additive and low-cost acoustic separation system that can be implemented in domestic and commercial sectors and wastewater treatment plants to remove a significant portion of MPs from wastewater at a high processing rate. This is a unique configuration of a split-flow double-pass acoustocollector allowing for enhanced removal efficiencies. Moreover, the concentrated stream of MPs collected from the device ensures that little energy is expended in MP recovery by any thermal post-processing. The agglomerated mass of MPs can thereafter be disposed of safely or repurposed to prevent re-entry to the environment. The system can also be treated as a sampling tool for further MP risk assessment. This project aims to address the shortcomings of current MP removal technologies and provide a greener alternative that can be adopted into existing systems without the need for a complete overhaul.</p>
<b>Summary of the Findings/ Outcomes:</b>	To be available upon completion of the project