Environmental Research, Technology Demonstration and Conference Project

ECF Project:	ECF 2022-127
Project Title:	Environment and Conservation Fund - Advanced processing of food waste digestate for hydrogen production and nutrients recovery based on catalytic wet oxidation: a zero-waste strategy contributing to Hong Kong's decarbonization goals
Principal Investigator:	Dr Zhao Jun, Department of Biology, Hong Kong Baptist University
Total Approved Grant:	$499,700
Duration:	1/9/2023 to 31/8/2025
Project Status/Remarks:	On-going
Project Scope:	The disposal of food waste digestate is one of the major challenges and problems for urban solid waste management. The high moisture content of food waste digestate makes it difficult to use technologies such as incineration and pyrolysis to process it, and the food waste digestate derived compost is also difficult to be fully consumed by the limited agricultural land with low application rate due to the high ash content. Therefore, more advanced technology is urgently needed to deal with food waste digestate. This project aims to develop practical zero-waste technology based on wet oxidation for processing food waste digestate to produce hydrogen and recycle the nutrients. 1. Investigation and optimization of the catalytic wet oxidation of food waste digestate to hydrothermally oxidize and decompose the digestate under mild conditions. 2. Investigation and optimization of the catalytic dehydrogenation of the food waste digestate for hydrogen production. 3. Verify the enrichment process of the nutrients in the oxidatively decomposed digestate solution and recover the nutrients/salts. 4. Conduct technical and economic analysis of the catalytic wet oxidation technology and evaluate its decarbonization capacity.
Summary of the Findings/ Outcomes:	To be available upon completion of the project