Master Thesis Subjects (Biotechnology MBT)
planned date of master thesis defence in 2022/2023
Institute of Environmental Protection and Engineering

Promotor	Temat pracy dyplomowej	Krótka charakterystyka pracy	Experimental work	Short description of the experiment
dr hab. inż. Katarzyna Bernat, prof. UWM	Biomethane potential during co-digestion of kitchen wast and green waste after thermal pretreatment	The aim of the study is to compare the methane potential of the mixture of kitchen waset and untreated and pretreated (thermal pretreatment) green waste	YES	The study will be carried out in the Automatic Methane Potential Test System that has become the research-standard analytical tool for anaerobic batch fermentation testing. Methane potential will be determined for the mixture of kitchen waste and green waste. Green waste will be untreated and pretreated with the use thermal pretreatment
dr hab. inż. Katarzyna Bułkowska	The hydrogen production from agricultural waste	The aim of the experiments will be determine the biogas/hydrogen production from agricultural waste. The work will be focues on the optymalization of operational conditions like organic loading rate and hydraulic retention time.	YES	The experiments will be conducted in the CSTR reactors. Student will be analize the feedstocks, digestate, biogas production and hydrogen content. The main analysis are: total solids, volatile solids, COD, ammonium nitrogen, volatile fatty acids and orthophosphates concentration.
prof. dr hab. inż. Sławomir Ciesielski	Environmentally friendly biosurfactants produced by bacteria	The work will be devoted to a review of the current achievements in the production of biosurfactants by bacteria. The utilization of renewable resources as major substrates will be emphasized in the work.	Theoretical work.	Theoretical work.
dr. hab. inż. Agnieszka Cydzik-Kwiatkowska, prof. UWM	Seasonal variations of microbial community in full-scale wastewater treatment plant with aerobic granules	In the study, biomass sampled from a full-scale facility with aerobic granular sludge will be used to investigate changes in species composition depending on the seasonal temperature variations	YES	Analysis of freshly sampled wastewater and biomass. Isolation of DNA from frozen samples collected throughout the year.
dr. hab. inż. Agnieszka Cydzik-Kwiatkowska, prof. UWM	Effect of anode modification on microbial activity in microbial fuel cell	In the study, biomass sampled from a lab-scale microbial fuel cell will be used to investigate changes in microbial activity resulting from chemical modification of anode	YES	The study will be conducted in lab-scale microbial fuel cells (MFC). In one of the MFC, anode surface will be chemically modified. At the end of the experiment, from biomass sampled in an anode compartment RNA will be isolated and subjected to real-time PCR.
dr hab. inż. Zygmunt Mariusz Gusiatin, prof. UWM	The effect of different modification methods on biochar properties and its potential for metal immobilization in soil.	The aim of this study will be determination the impact of selected methods of biochar modification on its physical and chemical properties and on the immobilization of metals, properties and phytotoxicity of remediated soil	YES	In the experiment, the effect of selected methods of biochar modification on remediation of metal-contaminated soil will be investigated. This selection will be performed based on literature review. Modified biochars will be characterized with physical and chemical indicators. The effect of modified biochars on metal immobilization, selected soil properties and phytotoxicity will be determined in incubation experiments.
dr hab. inż. Dorota Kulikowska, prof. UWM	Recovery of value added products from wastewater and waste	The aim of the work will be a literature review on new technologies / methods used for the recovery of valuable substrates from different kind of wastewater and organic waste	NO	Not applicable