Lehrstuhl für Energiesysteme
TUM School of Engineering and Design
Technische Universität München

Bachelor- / Semester- / Masterarbeit

(Experimentell)

Research stay in Lithuania: Exploring Plastic Pyrolysis Utilizing the TG-FTIR-GC/MS System

Description:

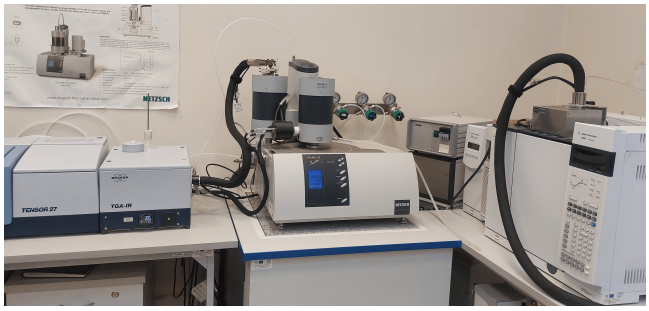
The extensive use of plastic products and the lack of proper management of these waste causes serious environmental pollution and thus harm to ecosystems. Chemical recycling into monomers or value-added chemicals, encompassing processes such as pyrolysis or gasification, emerges as a promising plastic waste conversion path, particularly in circumventing the difficulties associated with extensive sorting of plastic waste. Kaunas University of Technology (KTU) invites students for a research internship to investigate the potential of chemical recycling of plastic in the Lithuanian Energy Institute (LEI) – energy-related research, R&D competence center in Lithuania. The objective of this internship - to explore the potential of chemical upcycling of plastic via the thermochemical process of pyrolysis. To accomplish the aims of this research endeavor, state-of-the-art instrumentation, including thermogravimetric analysis device integrated with Fourier-transform infrared spectroscopy (FTIR) and gas chromatography (GC/MS), will be employed. The acquired results will be compared to feasible up-to-date conversion routes of plastic waste and conclusions will be drawn in relation with the principles of circular economy. Travel and living cost are not covered by the institute. However, the student is encouraged to apply for individual funding via ERASMUS, DAAD or other schemes.

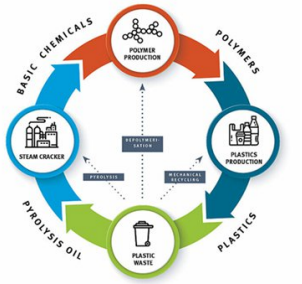
Requirements:

- Interest in thermochemical conversion processes application on waste fractions;
- Ability to work independently;
- Laboratory work and data analysis experience.

Work packages:

- Reviewing the literature on plastic pyrolysis;
- Conducting TG-FTIR-GC/MS experiments at different process parameters with different synthetic polymers;
- Interpretation and description of instrumental analysis results.





Start: Flexible

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