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Experimental investigation of mixed plastic waste pyrolysis in a bench scale reactor

Aim

This master thesis aims to investigate the effect of experimental conditions on the mixed plastic waste pyrolysis in the newly built RQChem bench scale reactor.

Justification

Plastic waste has caused serious environmental problems in the world, including the CO₂ emissions from its fossil-fuel-based production and discarding into nature without well-treatment. European Union has taken active actions to increase the reusing and recycling of plastic waste to create a circular economy and carbon neutrality. Pyrolysis is an effective route to deal with mixed plastic waste by producing high-added-value chemicals. Several operational conditions would affect the product composition of mixed plastic pyrolysis, for example, temperature, pressure and rotating speed of the CSTR. This research will provide reliable results to optimize the operating conditions of mixed plastic waste pyrolysis, which will benefit the scaling up and commercialisation in the future.



Program

1. Literature review of mixed plastic waste pyrolysis experiments, pointing out the problems of available research.
2. Learn experimental operations with RQChem and GCxGC
3. Design and operate the experiments.
4. Analyze the data and write a report.