

## Optimization of the alkaline hydrolysis of PET pellets by variation of the MEG dosage

The chemical recycling of polyethylene terephthalate (PET) via alkaline hydrolysis is a promising route for closing material loops. The scalability and efficiency of the process are contingent on the rheology and mass transfer within the reactor. In this context, monoethylene glycol (MEG) functions not only as a reaction product but is also specifically used as a process aid ("lubricant") in the batch process.

The objective of this work is to determine the optimal operating point through experimental means by varying the MEG content, with the aim of achieving a maximum depolymerization rate with minimal MEG input and minimal energy consumption.

### The main focus areas of the research are:

- **Experimental batch hydrolysis:** Conducting systematic experimental series on the depolymerization of PET pellets.
- **Parameter variation:** Investigating the influence of MEG concentration and various process variables.
- **Operating point optimization:** Identification of ideal solid-to-liquid phase ratios to increase process efficiency.
- **Product analysis:** Quantification of monomer yield and determination of the purity levels of the reaction products.

Target audience: Mechanical, bioengineering, chemical, pharmaceutical, biotechnology and environmental engineering, and related fields.

**Start: Available from July 2026 onwards by arrangement!**

A detailed overview of the topic is available at any time. The scope and requirements of the project can be tailored to your individual needs or the nature of your work.

