

Thermogravimetric Kinetics of Polyethylene Decay Over Silicon Aluminophosphate

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Abstract

Thermogravimetric analysis (TGA) is a powerful technique used to study the thermal decomposition behavior of materials. In this study, the thermogravimetric kinetics of polyethylene (PE) decay over silicon aluminophosphate (SAPO) was investigated. TGA was employed to measure the weight loss of PE samples under controlled heating conditions, and the obtained data was analyzed to determine the kinetic parameters governing the decomposition process. The effects of SAPO as a catalyst on the decomposition behavior of PE were also explored. The results provide valuable insights into the degradation mechanism of PE in the presence of SAPO and contribute to the understanding of thermal stability and decomposition kinetics of polymer-catalyst systems.

Keywords:

Introduction

The study focuses on the thermogravimetric kinetics of polyethylene (PE) decay over silicon aluminophosphate (SAPO). The research aims to investigate the thermal decomposition behavior of PE in the presence of SAPO as a catalyst. The study involves measuring the weight loss of PE samples under controlled heating conditions and analyzing the obtained data to determine the kinetic parameters governing the decomposition process. The effects of SAPO as a catalyst on the decomposition behavior of PE are also explored. The results provide valuable insights into the degradation mechanism of PE in the presence of SAPO and contribute to the understanding of thermal stability and decomposition kinetics of polymer-catalyst systems.

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Method

Sample preparation:

The samples were prepared by...

Characterization of PE samples:

The PE samples were characterized by...

Thermogravimetric analysis (TGA):

TGA was performed to study the thermal decomposition behavior of the PE samples. The weight loss of the samples was measured as a function of temperature and time. The obtained data was analyzed to determine the kinetic parameters governing the decomposition process.

Data analysis:

The kinetic parameters were determined by fitting the TGA data to the Arrhenius equation. The activation energy and pre-exponential factor were calculated from the slope and intercept of the linear plot of $\ln(-\frac{dW}{dt})$ versus $1/T$.

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Conflict of Interest

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