

Accepted Manuscript

Title: A Heterogeneous Chemical Reactor Analysis and Design Laboratory: The Kinetics of Ammonia Decomposition

Author: Jason C. Ganley

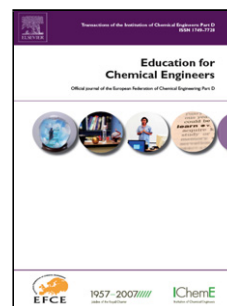
PII: S1749-7728(17)30041-6
DOI: <http://dx.doi.org/10.1016/j.ece.2017.08.003>
Reference: ECE 149

To appear in: *Education for Chemical Engineers*

Received date: 15-4-2017
Revised date: 5-6-2017
Accepted date: 20-8-2017

Please cite this article as: Ganley, Jason C., A Heterogeneous Chemical Reactor Analysis and Design Laboratory: The Kinetics of Ammonia Decomposition. *Education for Chemical Engineers* <http://dx.doi.org/10.1016/j.ece.2017.08.003>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.



A Heterogeneous Chemical Reactor Analysis and Design

Laboratory: The Kinetics of Ammonia Decomposition

Jason C. Ganley

Department of Chemical and Biological Engineering, Colorado School of Mines,

1613 Illinois Street, Golden, CO, USA

jganley@mines.edu

Tel: +1 303 384 2163

Highlights

- Detailed description of a catalytic fixed-bed reactor system.
- Decomposition of ammonia over supported catalysts for chemical reactor design.
- Varying feed compositions to determine parameters for complete reaction rate law.
- Development of proposed reaction rate expressions.
- Comparison of calculated and experimental rates to select a reactor model.

Abstract

A laboratory module for senior-level reaction engineering/reactor design students is described. Students use low-conversion experimental data to explore and characterize the kinetics of ammonia decomposition over various supported catalysts at atmospheric pressure in a packed-bed reactor. Each student team is assigned one of four catalyst types, a reactor temperature, and a series of feed flow rates and compositions. Aggregate data from

Download English Version:

<https://daneshyari.com/en/article/4766394>

Download Persian Version:

<https://daneshyari.com/article/4766394>

[Daneshyari.com](https://daneshyari.com)