Abstract

This is your silly abstract here.

Keywords: Silly, keywords

Summary for Lay Audience

Here is your Summary for Lay Audience.

Co-Authorship Statement

Your Co-Authorship Statement here.

Acknowledgements

Here is your acknowledgements.

First and foremost, I would like to express my deepest gratitude to my main supervisor...

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Abbreviations

CDF Cumulative distribution function

CFB Circulating fluidized bed

CFD Computational fluid dynamics

FCC Fluid catalytic cracking

PDF Probability distribution function

Subscripts

g Gas phase

s Solids phase

Symbols (greek letters and others)

Γ Mass diffusivity, kg/m/s

μ Viscosity, kg/m/s

ρ Density, kg/m^3

Symbols

A Area, m^2

D Diameter, m

H Height, m

Chapter 1

Introduction

Here is your first chapter: Introduction.

1.1 Background

Your background (Deng et al., 2017).

1.2 Research objectives

The overall objective is ...

1.3 Thesis structure

This thesis follows the integrated-article format as outlined in the thesis guide of Western University. The thesis is organized as follows:

References

Deng, Z., Xia, Y., Long, B., & Ding, Y. (2017). Volumetric properties of diisopropyl ether with acetone at temperatures from 283.15 K to 323.15 K: An experimental and theoretical study. *Journal of Molecular Liquids*, *243*, 257–264.

Chapter 2

Main Chapter 1

2.1 Introduction

This chapter comprises four parts.

2.2 Numerical models

2.2.1 Development of the reactive transport model

The ozone mass transport equation in the gas phase can be described as follows:

$$\frac{\partial}{\partial t}\left(\varepsilon_{\mathrm{g}}\,\rho_{\mathrm{g}}\,Y_{\mathrm{g}}^{\mathrm{O_3}}\right)+ \tag{2.1}$$

2.3 Setups for micro fixed-bed reactor simulations

Figure 2.1 shows ...

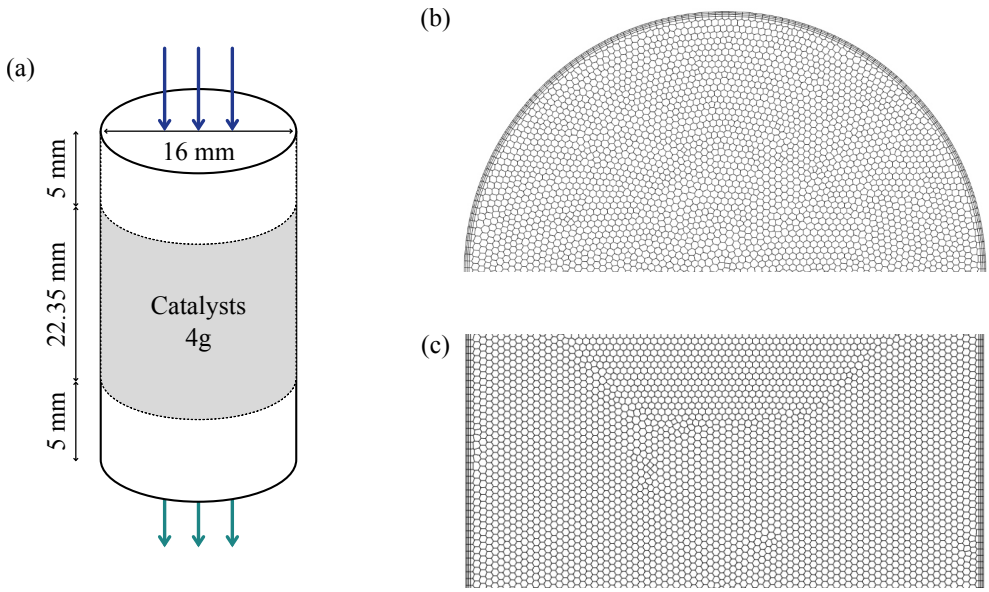

Figure 2.1: Computational domain and mesh of the micro fixed-bed reactor

2.4 Results and discussion

2.4.1 Validation of the reactive transport model

Table 2.1 shows ... (Liu, 2016; Wang et al., 2014).

Table 2.1: Comparison of numerical results with experimental data

Case	$C_{g,in}^{O_3}$	Packed ε_s	U_g	k_r	$C_{g,out}^{O_3}$	$C_{g,out}^{O_3}/C_{g,in}^{O_3}$	APE
Unit	ppmv	-	m/s	s^{-1}	ppmv	-	%
Exp. 1*	115.1	0.5	0.1124	4.12	50.70	0.44000	-
Num. 1	115.1	0.5	0.1124	4.12	50.84	0.44170	0.39
Exp. 2 **	100.0	0.5	0.57	49.12	9.054	0.09054	-
Num. 2	100.0	0.5	0.57	49.12	9.049	0.09049	0.06

* Data from the work of Liu (2016).

** Data from the work of Wang et al. (2014).

2.5 Conclusions

The present study involved

References

Liu, J. (2016). *Reactor performances and hydrodynamics of various gas-solids fluidized beds* [Doctoral dissertation, The University of Western Ontario]. https://ir.lib.uwo.ca/etd/3967/

Wang, C., Wang, G., Li, C., Barghi, S., & Zhu, J. (2014). Catalytic ozone decomposition in a high density circulating fluidized bed riser. *Industrial & Engineering Chemistry Research*, *53*(16), 6613–6623.

Chapter 3

Conclusions and Recommendations

3.1 Thesis summary and conclusions

This thesis work comprehensively investigates ...

Figure 3.1 depicts ...

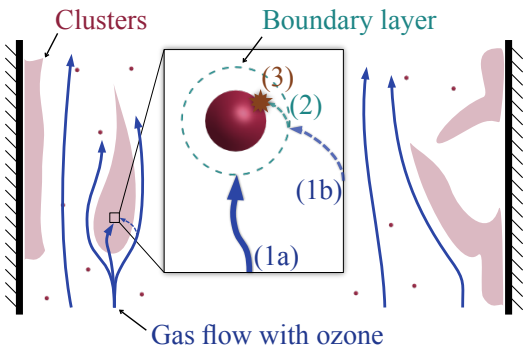

Figure 3.1: Caption...

3.2 Limitations and recommendations

Limitations ...

Appendix A

Your appendix

This is your appendix (Deng et al., 2017).

References

Deng, Z., Xia, Y., Long, B., & Ding, Y. (2017). Volumetric properties of diisopropyl ether with acetone at temperatures from 283.15 K to 323.15 K: An experimental and theoretical study. *Journal of Molecular Liquids*, *243*, 257–264.

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