# STRUCTURE FORMING PROCESSES IN MESOSCOPIC POLYMER SYSTEMS

by

#### Tomas Koci

(Under the direction of Michael Bachmann)

#### Abstract

This is going to be the best abstract ever :)

INDEX WORDS: Index word or phrase, Index word or phrase, Index word or phrase,

Index word, Index word, Index word

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# Structure Forming Processes in Mesoscopic Polymer Systems

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Mention Michael Bachmann, Steven Lewis, Heinz Schuttler, D.P. Landau, Jeff Mike and Shan-Ho, finally all the Links and my family

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# Introduction

Kickass Intro...

### **Elements of Statistical Mechanics**

- 2.1 The microcanonical ensemble
- 2.2 The canonical ensemble
- 2.3 Generalized ensembles

## Computational Methods

3.1	Markov	chain	Monto	Carlo
.). I	Warkov	cnam	wionte	Cario

- 3.1.1 Master equation and detailed balance
- 3.1.2 Metropolis sampling
- 3.2 Generalized ensemble Monte Carlo
- 3.2.1 Parallel tempering
- 3.2.2 Multiple Gaussian modified ensemble
- 3.2.3 Histogram reweighting methods
- 3.2.4 Multicanonical sampling
- 3.3 Simple Monte Carlo updates

# Coarse-grained Homopolymer Model

- 4.1 Flexible elastic homopolymer
- 4.2 Interacting homopolymers

# Confinement Effects on Structural Transitions in Flexible Homopolymers

- 5.1 Introduction
- 5.2 Canonical analysis
- 5.3 Inflection-point analysis
- 5.4 Hyper-phase diagrams

Impact of Bonded Interactions on the Ground-State Geometries of Flexible Homopolymers

- 6.1 Structural order parameters
- 6.2 15-mer
- 6.3 55-mer

# Aggregation of Flexible Elastic Homopolymers

- 7.1 Introduction
- 7.2 Microcanonical analysis
- 7.2.1 Subphases and subphase transitions
- 7.2.2 Missing subphases and translational entropy
- 7.2.3 Density effects on the latent heat

# Summary and Outlook

[ You could put a picture here. ]

Figure 8.1: Example of a figure.

Table 8.1: Example of a table. [The contents of the table would go here.]