

TABLE OF CONTENTS

Acknowledgement.....	i
الاٰهاداء.....	ii
Abstract.....	iii
الملخص.....	iv
Table of contents.....	v
List of Figures.....	vii
List of Tables.....	x
1. Introduction.....	1
2. Equation of State of ideal quantum gases.....	5
2.1 Ideal Fermi gas Equation of State.....	5
2.2 Infinite system of non-interacting fermions.....	11
2.3 Ideal Bose gas Equation of State.....	17
2.4 Infinite system of non-interacting boson.....	19
3. The Skyrme interaction and the nuclear equation of state.....	21
3.1 The Skyrme interaction.....	21
3.2 Equation of State of a system in the nucleonic model.....	30
3.3 Nuclear Equation of State for asymmetric nuclear matter.....	37

4. Nuclear Statistical Equilibrium (NSE) model	41
 4.1 Review of the Equation of State of clustered nuclear matter in various models.....	41
 4.2 The Nuclear Statistical Equilibrium (NSE) Model.....	44
 4.3 Equation of State of clustered nuclear matter in the NSE model.....	50
5. The Hot Liquid Drop Model and the limiting temperature.....	53
 5.1 The Hot Liquid Drop model.....	53
 5.2 The coexistence equations.....	58
 5.3 The Limiting Temperature.....	60
 5.4 Evaluating the vapor asymmetry parameter.....	62
6. Results and Conclusions.....	68
 6.1 The coexistence equations with clusters in the vapor.....	68
 6.2 The Limiting Temperature.....	70
 6.3 Conclusions.....	74
References.....	76
Appendix A.....	78