

# Sample Honours Thesis Table of Contents

Please note: this is only an **example**. Each School has its own specifications, some of which are stricter than others. Furthermore, each thesis is different and will have different emphases on particular sections. CHECK with your supervisor for advice on length of sections and of the thesis as a whole.

**SAMPLE: *from the School of Photovoltaic and Solar Energy Engineering, UNSW***

## TABLE OF CONTENTS

<b>ABSTRACT</b> .....	i
<b>ACKNOWLEDGEMENTS</b> .....	ii
<b>TABLE OF CONTENTS</b> .....	iii
<b>1. INTRODUCTION</b> .....	1-1
1.1 P-TYPE LAYERS IN SILICON SOLAR CELLS .....	1-2
1.2 SELECTION CRITERIA OF BORON DIFFUSION SOURCE .....	1-3
1.3 THESIS STATEMENT .....	1-3
1.4 THESIS OUTLINE .....	1-4
<b>2. LITERATURE REVIEW</b> .....	2-1
2.1. CLASSIC DIFFUSION CONCEPT .....	2-1
2.1.1 DIFFUSION MECHANISMS .....	2-1
2.1.2 FICK'S LAW .....	2-4
2.2 BORON DIFFUSION .....	2-9
2.2.1 DIFFUSIVITY .....	2-9
2.2.2 SEGREGATION COEFFICIENT .....	2-10
2.2.3 SILICON SELF-INTERSTITIAL AND DIFFUSION RATE .....	2-12
2.2.4 FORMATION OF BORON RICH LAYER (BRL) .....	2-12
2.2.5 BORON DIFFUSION SYSTEMS .....	2-14
2.3 BORON NITRIDE SOLID SOURCE DIFFUSION .....	2-15
2.3.1 BENEFITS AND CHALLENGES .....	2-15
2.3.2 DIFFUSION PROCESS .....	2-16
2.4 SOLAR CELL CHARACTERISATION .....	2-18
<b>3 EXPERIMENTAL WORK</b> .....	3-1

3.1 PREPARATION .....	3-2
3.1.1 SET UP TWO FURNACES.....	3-2
3.1.2 BN SOLID SOURCE PREPARATION .....	3-5
3.1.3 RISK ASSESSMENT AND PROCESS INSTRUCTION SHEET .....	3-6
3.2 UNIFORMITY, REPEATABILITY AND CONTROLLABILITY .....	3-6
3.2.1 UNIFORMITY ACROSS WAFER .....	3-6
3.2.2 UNIFORMITY ACROSS BATCH.....	3-16
3.2.3 REPEATABILITY .....	3-17
3.2.4 CONTROLLABILITY .....	3-18
3.3 PRELIMINARY INVESTIGATION ON MINORITY CARRIER LIFETIME .....	3-19
3.3.1 POOR SURFACE PASSIVATION .....	3-22
3.3.2 CONTAMINATION OF DIFFUSION SURFACES .....	3-23
CONTAMINATION OF BN SOLID SOURCES.....	3-23
3.4 FURTHER INVESTIGATION ON BN SOLID SOURCE CONTAMINATION .....	3-25
3.4.1 SOURCE BURN-OUT.....	3-25
3.4.2 IMPURITY FILTERING EFFECT.....	3-26
3.4.3 SILICON-WAFER BORON SOURCE.....	3-28
3.4.4 SOLAR CELL FABRICATION .....	3-29
3.5 INTRODUCTION OF OXYGEN INTO THE DIFFUSION PROCESS.....	3-31
3.5.1 OXYGEN BEFORE DEPOSITION (PRE-OXIDATION) .....	3-32
3.5.2 OXYGEN DURING DEPOSITION .....	3-35
3.5.3 OXYGEN DURING DRIVE-IN .....	3-36
<b>4 DISCUSSION OF THE RESULTS.....</b>	<b>4-1</b>
4.1 UNIFORMITY, REPEATABILITY, CONTROLLABILITY .....	4-1
4.1.1 UNIFORMITY AND SOLID SOLUBILITY LIMIT .....	4-1
4.1.2 DIFFUSION WITH INFINITE SOURCE.....	4-2
4.1.3 FORMATION OF BORON RICH LAYER (BRL).....	4-3
4.1.4 INTRODUCING OXYGEN INTO THE DIFFUSION PROCESS .....	4-3
4.1.5 ATHENA MODELLING.....	4-4
4.2 MINORITY CARRIER LIFETIME DEGRADATION.....	4-4
4.2.1 CONTAMINATION OF BN SOLID SOURCES .....	4-4
4.2.2 PREVENTING IMPURITIES FROM DIFFUSING INTO THE SILICON WAFER.....	4-6
4.2.2.1BN SOURCE BURN-OUT CYCLE .....	4-6
4.2.2.2 INTRODUCTION OF OXYGEN IN THE DIFFUSION PROCESS.....	4-7
<b>5 CONCLUSION .....</b>	<b>5-1</b>
5.1 FUTURE WORK.....	5-2
<b>REFERENCES .....</b>	<b>IV</b>

**APPENDIX A – PRODUCT INFORMATION OF BN SOLID SOURCE**

**APPENDIX B – RISK ASSESSMENT AND PROCESS INSTRUCTION SHEET**

(Chen 2003, p.iii)