

**MODELLING AND ANALYSIS OF ZINC OXIDE ANTIREFLECTION
COATING THICKNESS ON SILICON SOLAR CELLS USING WAFER
RAY TRACER**

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TABLE OF CONTENTS

ACKNOWLEDGEMENT	i
TABLE OF CONTENTS	ii
LIST OF FIGURES	iii
LIST OF TABLES	iv
LIST OF ABBREVIATIONS	iv
ABSTRACT	v
CHAPTER 1	
INTRODUCTION	
1.1 Background of study	1
1.2 Problem statement	3
1.3 Objective	5
1.4 Significant of study	5
CHAPTER 2	
LITERATURE REVIEW	
2.1 Introduction	6
2.2 Structure of Solar Panel	8
2.3 Optical Properties in Solar Cel	9
2.3.1 Thickness of the ARC	11
2.4 Current Density	11
2.5 Zinc Oxide as ARC	13
2.6 AM 1.5G	14
2.7 Simulation Method	16
CHAPTER 3	
RESEARCH METHODOLOGY	
3.1 Introduction	18
3.2 Design of the Solar Cell	21
CHAPTER 4	
RESULT AND DISCUSSION	
4.1 Introduction	24
4.2 Reflection, Absorption and Transmission	24
4.3 J_{\max} value	27
CHAPTER 5	
CONCLUSION AND RECOMMENDATION	
5.1 Conclusion	30
5.2 Recommendation	31
REFERENCES	32

LIST OF FIGURES

	Page
Figure 2.1 : Illustration of diffusion of light	7
Figure 2.2 : 6 main components of solar panel	8
Figure 2.3 : Illustration to optical phenomenon in solar cells	10
Figure 2.4 : IV curve of a solar cell showing the short circuit current	12
Figure 2.6 : a) Illustration of the condition of the sun of certain AM. b) Solar spectrum of AM 1.5G.	15
Figure 3.1.1 : Front page of wafer ray tracer software	19
Figure 3.1.2 : Exanple of the graph of Reflection, Absoprtion and Transmission	20
Figure 3.1.3 : Example of the output data	20
Figure 3.2 : a) Reference: Diagram of planar silicon solar cells without ARC as reference. b) Scheme I: Silicon solar cell with ZnO ARC with thickness of 60nm. c) Scheme II: Silicon solar cell with ZnO ARC with thickness of 70 nm. d) Scheme III: Silicon solar cell with ZnO ARC with thickness of 80 nm. d) Scheme IV: Silicon solar cell with ZnO ARC with thickness of 90 nm.	21
Figure 4.2 : a) Reflection b) Absorption c) Transmission data curves for silicon solar cells with different thickness of ZnO ARC which is 60nm, 70 nm, 80 nm and 90 nm and also with the reference	25
Figure 4.3 Graph of External Quantum Efficiency (EQE) for the reference and the scheme for 60nm, 70nm, 80nm and 90nm ZnO ARC on silicon solar cell.	29

LIST OF TABLES

	Page
Table 3.2 : Estimation of current density for each of the thickness of ZnO ARC	22
Table 4.1 : The calculated J_{\max} of the silicon solar cell for the reference (100 μm) and the respective scheme for the ARC as shown in the chapter 3	28

LIST OF ABBREVIATIONS

ARC	: Antireflection Coating
ZnO	: Zinc Oxide
PV	: Photovoltaic
EVA	: Ethylene Vinyl Acetate
AM1.5g	: Air Mass 1.5 spectra

ABSTRACT

Antireflective coating (ARC) are starting to gained popularity in the market of the solar cells since it has the potential to reduce the optical loss experience by the solar cells. The reflection from the surface of the solar cells without the ARC is approximately 30% and it affected the current density in the cells. The ZnO material has been seen to have a very promising criteria to be a single layer of the ARC so this material have been chosen to be the ARC to see enhancement of the solar cells performance. The layer ZnO ARC is used on top of the solar cell with various thickness which is 60nm, 70nm, 80nm and 90 nm. The optical properties of each thickness have been gained by using a software name Wafer Ray Tracer by PV lighthouse. The data to be analysed are the reflection, absorption and transmission and the current density. The optimum thickness of ZnO that result in the maximum current density will be study in this work. This simulation at the end show that every thickness of the ZnO ARC have their own wavelength that they work at the optimum level but it can be said that it higher the performance of the solar cells without the ARC.