

MASTER'S THESIS

Electrical and optical properties of triphenylamine-based compounds and devices

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**Electrical and Optical Properties of Triphenylamine-based
Compounds and Devices**

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**A thesis submitted in partial fulfillment of the requirements
for the degree of
Master of Philosophy**

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Abstract

Organic semiconductors receive much attention in the past decade in the world of electronics, especially in the display technology. They have many advantages, including flexibility, low cost, and ease of processing. The potential applications of organic semiconductors include organic thin film transistors (OTFTs), organic photovoltaic cells (OPCs), and organic light emitting diodes (OLEDs). In all applications, charge transport plays a crucial role on device performance. In general, transporting layer can be divided into electron transporting type and hole transporting type. The ideal candidate for electron transporter is still being searched. However, it is known that triphenylamine compounds can act as very useful hole transporters. For this class of materials, a thorough understanding and investigation are needed. In this project, different triphenylamine derivatives are investigated. Based on the time-of-flight (TOF) and admittance spectroscopy (AS) techniques, the charge transporting properties and the degree of dispersion of the materials will be measured; furthermore, applications of the triphenylamine derivatives in electroluminescence devices will also be examined.

Table of Contents

Declaration	i
Abstract.....	ii
Acknowledgements	iii
List of Tables	viii
List of Figures.....	ix
Chapter 1 Introduction to Organic Semiconductor.....	1
1.1 Characteristics of Organic Semiconductor	1
1.2 Applications of Organic Semiconductor in Nowadays Technology.....	4
1.2.1 Organic Light Emitting Diode (OLED).....	4
1.2.2 Organic Thin Film Transistor (OTFT).....	6
1.2.3 Organic Photovoltaic Cell (OPV).....	7
1.3 Research Focus	8
Chapter 2 Basic Principles	9
2.1 Charge Conduction in Organic Semiconductor	9
2.2 Charge Transport Mechanism.....	10
2.2.1 Hopping Conduction.....	11
2.2.1.1 Gaussian Disorder Model (GDM)	11
2.2.1.2 The Scher-Montroll Random Walk Model	14
2.2.1.3 Concentration Dependence of Mobility.....	16
2.3 Charge Injection Mechanism	18
2.3.1 Thermionic Emission.....	18
2.3.2 Tunneling Injection.....	20
2.4 Operating Mechanism of Organic Light Emitting Diodes (OLEDs).....	21
2.4.1 Exciton.....	22
2.4.2 Exciton Relaxation and Type of Light Emission	23
2.4.3 Current-Voltage (IV) Characteristic of Typical OLEDs	25
2.4.4 OLEDs in Advanced Structure	27
Chapter 3 Experimental Techniques.....	28
3.1 Materials Purification	28
3.1.1 Polymeric Material	28
3.1.2 Small Molecular Material	30
3.2 Sample Preparation	31

3.2.1	Substrate Treatment	31
3.2.2	Sample Fabrication	32
3.2.2.1	Spin Coating	32
3.2.2.2	Thermal Evaporation	36
3.2.3	Encapsulation of Sample	37
3.3	Characterization Techniques and Apparatus	38
3.3.1	The Time-of-Flight (TOF) Method	38
3.3.2	Admittance Spectroscopy (AS)	41
3.3.3	Current-Voltage-Luminance (IVL) Measurement	43
3.3.4	Electroluminescence (EL) Measurement	44
Chapter 4 Transport and Luminescence in Hole Transporting Compounds.		45
4.1	Introduction to the Naphthyl Phenylamine (NPA) Hole Transporting Model Compounds	45
4.2	Effect of Dipole Moment	47
4.3	Results and Discussions	48
4.3.1	The Hole Mobilities of the NPA Compounds	48
4.3.2	The Dipole Moment Effect from Conducting Small Molecules	49
4.3.3	The Dipole Moment Effect from Polymer Matrix	52
4.3.4	Luminescent Properties of the NPA Compounds	55
4.4	Conclusion	58
Chapter 5 Charge Mobilities of Bipolar Compounds and Their Application		59
5.1	Introduction to the XOT Compounds	60
5.2	Results and Discussions	61
5.2.1	Bipolar Carrier Transport Characteristic	61
5.2.2	Application of XOT Compounds to OLEDs	66
5.2.3	Current Efficiency Characteristic of the XOT Devices	70
5.2.4	The Role of Current Balance in OLEDs Efficiency	70
5.2.5	Current Balance Characteristic on the AOT Device	73
5.3	Conclusion	76
Chapter 6 Effects of Carrier Scattering and Trapping on Charge Transport		78
6.1	Introduction to the NPB Compounds and Other Involved Dopants	79
6.2	Concepts of Charge Trapping and Scattering	80
6.3	Results and Discussions	81
6.3.1	Effects of Carrier Trapping and Scattering on Hole Mobility	81
6.3.2	Effect of Impurities on Dispersivity of Organic Materials	85

6.4	Conclusion	87
Chapter 7	Conclusion	89
Appendix.....	91
A.1	X-OPP Series Hole Blocking Compounds	91
A.2	Phosphorescent Bipolar Material.....	98
A.3	Compounds Sublimation Schedule.....	101
A.4	Spin Coating Thickness Calibration	104
A.5	Measurement and Curve Fitting Programs	105
A.5.1	AS Measurement Program.....	105
A.5.2	AS Fitting Program.....	117
A.5.3	Modified EL Program	131
A.5.4	TOF (W and $T_{1/2}$) Fitting Program.....	140
Publications	149
Conference Attended	150
Reference	151
Curriculum Vitae	158