EFFECT OF METAL CONTACT ON MEH-PPV FOR ORGANIC SOLAR CELLS APPLICATION

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Bachelor of Engineering (Hons) Electronics

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ABSTRACT

This paper focuses on the characterization of electrical, physical and optical properties. The active layer of the sample that has been used is the mixture of polymer MEH-PPV and THF. The active layer was deposited on top of the substrate using the spin coating technique. Then, the metal contacts were deposited. Type of metal contacts that involved in this experiment are Silver (Ag), Gold (Au) and Platinum (Pt). Another variable that is varied is the number of active layers on a substrate. Besides the effect of metal contact on MEH-PPV, this research is also done to investigate whether the thickness of the polymer will affect the optimization of OSC properties. The sample C which is the sample with 5 number of time of thin film being deposited has the best optical and physical properties. Metal contact of Ag, Au and Pt were deposited on these samples and it was observed that Ag portrays the best photoconductivity.

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CHAPTER 1

INTRODUCTION

1.1 Organic Solar Cell

Organic electronics is a future-oriented green technology involving environmental-friendly energy generation, economical energy use and the manufacture of electronic components in a way which protects resources using conducting and semi-conducting plastics [1]. One of the technologies that have been further developed is organic solar cell (OSC).

An organic solar cell or plastic solar cell is a type of polymer solar cell that uses a branch of electronics that deals with conductive organic polymers or small organic molecules, for light absorption and charge transport to produce electricity from sunlight by the photovoltaic effect. At present, organic solar cells are being extensively studied worldwide since they have the potential to inexpensively produce electricity from solar energy. These cells are different from inorganic semiconductor solar cells in that they do not rely on the large built-in electric field of a p-n junction to separate the electrons and holes created when photons are absorbed [2].

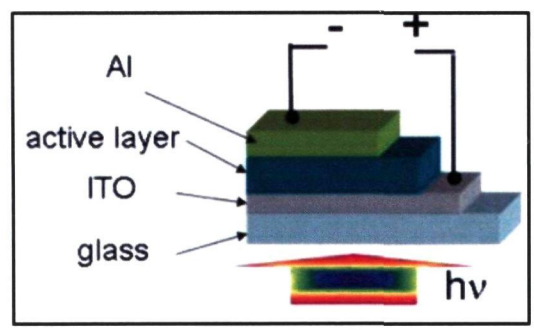

Figure 1.1: Organic solar cell structure [3]