ELECTRICAL PROPERTIES OF NANOSTRUCTURED ZINC OXIDE THIN FILM PREPARED BY SOL-GEL METHOD FOR HUMIDITY SENSOR

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ABSTRACT

The humidity sensor is produce by zinc oxide thin film by using sol-gel. These projects focus on the effect electrical properties of ZnO thin film for Humidity sensor. The effect of zinc oxide concentration to the electrical properties is measure by I-V measurement. The sol-gel method is use to produce the zinc oxide nanostructured that have the single nanorods particles mixed with some cluster of rods. The I-V measurement studies that the 0.05M of concentration having higher sensitivity Humidity sensor than 0.025M and 0.01M of concentration.

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CHAPTER 1

INTRODUCTION

1.1 BACKGROUND OF STUDY

Humidity is the amount of water vapor in the air. There are several types of humidity. The types of humidity are absolute humidity, mixing ratio, relative humidity, humidity during rain, specific humidity, and dew point and frost point. Sensing of relative humidity plays important role in various fields especially for human life. Therefore, humidity sensors had been studied and used intensively.

Humidity sensor is a device consisting of a special material whose electrical characteristics change according to the amount of humidity in the air. Sensing of relative humidity plays important role in various fields especially for human life. Therefore, humidity sensors had been studied and used intensively. For example, a humidity sensor was fabricated to equip a multisensor Microsystems for pulmonary functions diagnosis and in food industry, the humidity sensors had been used to control and monitor the process environment [1]. Other applications of humidity sensors including the meteorological services, chemical and food industry, civil engineering, air conditioning, agriculture and electronic processing. Humidity sensors are of increasing interest in electronic control systems [2]. There are three main operating principles of humidity sensors that are capacitive, resistive and thermal conductive. In this project the operating principle of resistive has been studied. The sensitivity of the samples in this project was depended by the resistance of the samples. Over the past decade, there has been a rapid development of new materials for usage in humidity sensor. It is well known that humidity sensitivity has been greatly improved since the sensors are made of nanoscale oxides. Recently, a high sensitivity of humidity sensor has been obtained from feather-like Zinc Oxide (ZnO) nanostructures.

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