DATA ACQUISITION FOR ISFET pH SENSOR SYSTEM BY USING SEEEDUINO STALKER AS A CONTROLLER

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MUHAMMAD AL BAQIR BIN ZINAL ABIDIN FACULTY OF ELECTRICAL ENGINEERING UNIVERSITI TEKNOLOGI MARA 40450 SHAH ALAM SELANGOR

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ABSTRACT

This project is about data acquisition for ISFET pH sensor system by using Seeeduino Stalker as a controller. ISFET pH sensor formed with reference electrode, which the function of reference electrode is to replace the gate of ISFET, is used in this project. Readout interface circuit is also used to produce the voltage response that is obtained from the ISFET sensor. The data are collected from pH4, pH7 and pH10. ISFET pH sensor and reference electrode are placed inside the pH solution and connected with the readout circuit. The voltage response that is obtained from the output of the readout circuit is then saved in the memory card on the Seeeduino Stalker. Data collected from April to May 2013, showed that voltage response for pH 4 is higher than pH7 and pH10. The objective of this project is to develop a measurement setup to collect the data from ISFET experiment especially the voltage response for every pH and the data from the readout circuit. Overall, this project objective achieved after the pH sample was tested from April to May 2013. The setup is successfully developed as the voltage response for every pH solution is complete collected from April to May 2013 and is saved in the data logger by using Seeeduino Stalker as a controller.

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CHAPTER 1

INTRODUCTION

1.1 INTRODUCTION

This chapter states three main parts of this project. The first part presents the problem statement which is the main idea for the project. Secondly, the objective of the project will be explain the outline of the justifications for the work. The last but not least is the scope of study is presented in the third section; it specifies the limitations and the boundaries of the project.

1.2 OVERVIEW OF PROBLEM

Ion Sensitive Field Effect Transistor (ISFETs) is electrochemical sensors that create electrical response same as metal-oxide field effect transistor application and have lots of characteristic. In order to learn ISFETs characteristic especially the ISFET sensitivity that can be obtained from the experiment in this work, the data or to be more specific the voltage response from the ISFET will be collected. Usually the data collection is done manually and plotted by using Excel only. The problem is the percentage of error is high when the data is collected and recorded due to human error.