

**REDOX REACTION DETECTION USING
POTENTIOSTAT AND MBED MICROCONTROLLER
AS DATA ACQUISITION**

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ABSTRACT

This project is to design a system to detect redox reaction and to design data acquisition to save data into Microsoft excel. The method to detect redox reaction is by using potentiostat. The potentiostat is a device consists of reference electrode, working electrode and control electrode. The data acquisition is a device to receive digital data so that user can measure any electrical voltage, current, temperature, sound by using a computer. Data acquisition used in this project is made by using Mbed Microcontroller cortex-M3. This project successfully able to runs redox reaction however, it does not yet able to save accurate data of redox reaction.

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CHAPTER 1

INTRODUCTION

1.0 INTRODUCTION

This chapter explains the introduction of this project and background information about redox reaction, potentiostat and MBED microcontroller. This chapter also include problem statements to define the purpose and objectives of this project and are clearly stated with the scope of project generally explain how the project will be done throughout the experiment. This chapter also include the introduction of each chapters.

1.1 BACKGROUND OF STUDY

Redox reaction is based on electrochemistry where it is concerned with the connection between electrical and chemical effect [16]. This field of study is about chemical reaction which produced electrical current and electrical energy causing chemical properties to change. In this project, it is distressed more in the effect of the transportation of charge across the interface between electrode and electrolyte. The movement of electron is called current, and the current is transported through electrode. The commonly used electrode is gold (Au) and platinum (Pt) [1]. The movement of charge between electrode to another electrode is via the movement of ions exist in the electrolyte. The electrolyte used in the project should be a solution with low resistance to allow current flow. The electrolyte also is needed in order to allow for control or measurement of the electrodes potential [2].

In electrolyte, an instrument called potentiostat with three electrodes are dipped into the solvent. The three electrodes are: working electrode, reference electrode and