Hazard Analysis
Measuring Microstructure Changes During Thermal Treatment

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Table 1: Revision History

Date	**Developer(s)**	**Change**
Oct 13, 2022	Abdul Nour Seddiki	Integrated the Template + Added System Boundaries and Components
Oct 14, 2022	Edwin Do	Add introduction, scope and purpose of HA
Oct 19, 2022	Edwin Do	Add roadmap
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1 Introduction

This document is the hazard analysis for Team 30 (ReSprint) Capstone project. This project collaborates with the Department of Materials Engineering to measure the microstructure changes of samples during thermal treatment.

For this document, a hazard will be defined as a scenario where the conditions of a system and environment constitutes the potential of harm to someone or something.

2 Scope and Purpose of Hazard Analysis

The purpose of this hazard analysis is to document any potential unsafe behaviour in this project. This includes risks in this project that can arise from using either the software or hardware components. For each hazard identified, this document will outline one or more methods to help mitigate the hazard.

The scope will be limited to identifying the possible hazards from the system's components, methods of mitigation, potential causes, and any resulting security or safety requirements.

3 System Boundaries and Components

This hazard analysis is conducted on the system that consists of the following components:

1. Thermally treated samples
2. The current source
3. A thermometer
4. The nano-voltmeter
5. Interfaces between above devices and control computer
6. The control computer
7. The software application that will be installed on the control computer

These components comprise the system in question. And they each are also considered the boundaries for this system. Some of the components mentioned are not controllable by ReSprint team, such as the thermally treated samples and all of the measurement devices and hardware including the current source, the thermometer, the nano-voltmeter, the communication interfaces and the control computer. Therefore, the only component controllable by ReSprint team is the software application and its sub-systems.

4 Critical Assumptions

The following is a list of assumptions to protect ourselves during the development of ReSprint from unforeseen hazards:

- Thermal treated samples will be contained in a safe area away from the control computer and operator.
- Curret source device will be used as intended and will not be misuse by the operator.
- Wires will not come loose during operation by the operator.
- Data collected from the samples will be saved correctly on the control device.
- Plugs and wires are attached correctly into the devices and control computer.

5 Failure Mode and Effect Analysis

[Include your FMEA table here —SS]

6 Safety and Security Requirements

[Newly discovered requirements. These should also be added to the SRS. (A rationale design process how and why to fake it.) —SS]

7 Roadmap

As part of this project, the safety requirements that we will address includes not using any colours and/or graphics that may cause harm or discomfort to the users and that the application along with its equipments will be functional. In addition, hardware-related requirements mentioned in the table above will be addressed up to the day of the final deliverable for the scope of this project. Any other requirement may be included in the Proof of concept or the final deliverable which are on November 14 2023 and March 20 2023 respectively.

Certain requirements will not be included as part of the capstone timeline. These requirements include ensuring that any future users will have sufficient training before interacting with the project and that the app should not be modified by an unauthorized user. They should be implemented in the future by whoever oversees the use of this capstone.