Internal Assessment: Chemistry

# Investigating the relationship between the amount of $MnO_2$ catalyst and the rate of reaction in the decomposition of $H_2O_2$.

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Word count: 123

# 1 Preliminary Research Plan

**Materials:**

- Water for dilution
- $H_2O_2(l)$, will be diluted to 1% for safety
- $MnO_2(s)$ powder, about 2g needed

**Apparatus:**

- Addition funnel
- Two- or multi-neck flask
- Clamp and stand
- Pressure sensor with tubing
- Graduated pipette and beakers for $H_2O_2$
- Thermometer to ensure constant initial temperature

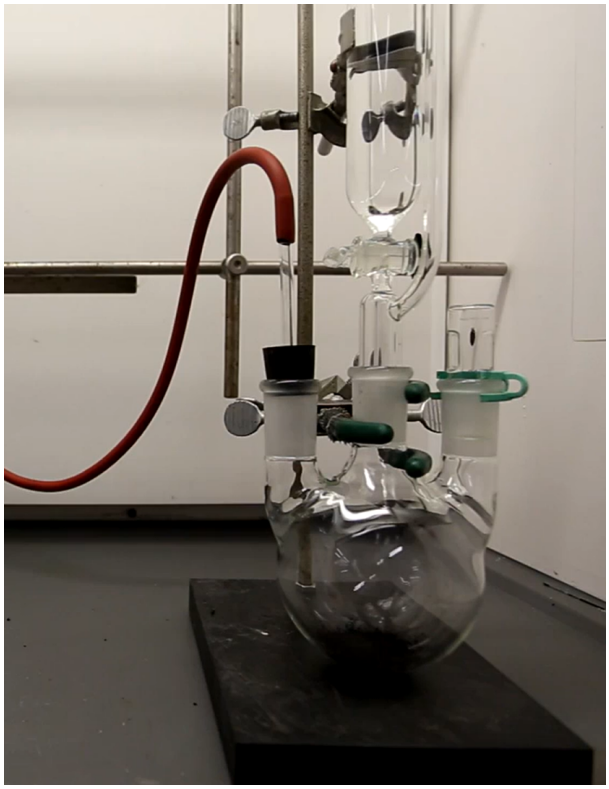

Figure 1: Example setup

This image is captured from the video *How to make an Oxygen Generator (MnO2/H2O2 Method)* uploaded to YouTube by NileRed, https://youtu.be/eI-HMUCEJsI.

My apparatus will be very similar to this; the only difference is that my rubber hosing will be connected to a pressure sensor.

In every trial, after checking that the initial temperature and pressure are constant, I precisely measure the amount of $MnO_2$ to add to the flask. Then I add some constant volume of $H_2O_2$ through the addition funnel into the flask and close the funnel so air doesn't escape. The reaction happens and I get data on the change in pressure over time.