

**Investigating the relationship between the amount of
MnO₂ catalyst and the rate of reaction in the
decomposition of H₂O₂.**

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1 Preliminary Research Plan

Materials:

- Water for dilution
- $\text{H}_2\text{O}_2(l)$, will be diluted to 3%
- $\text{MnO}_2(s)$ 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

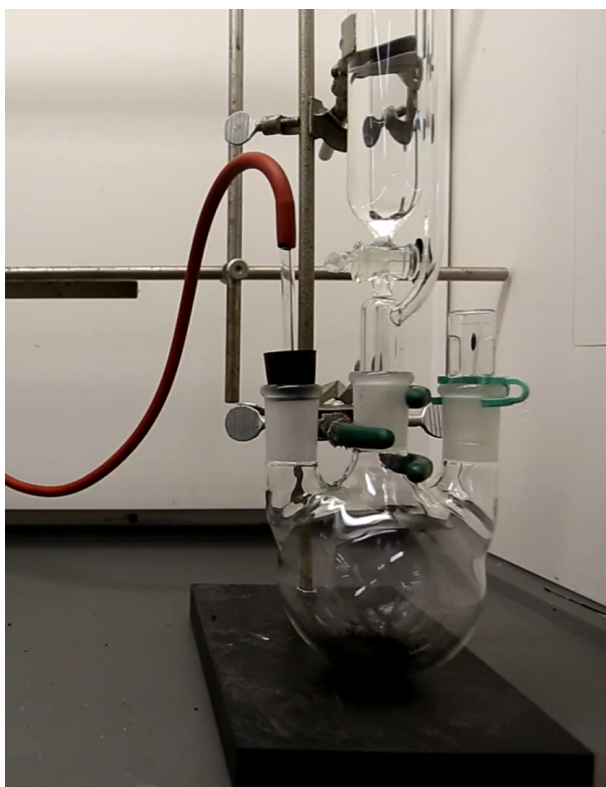


Figure 1: Example setup

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 MnO₂ to add to the flask. Then I add some constant volume of H₂O₂ through the addition funnel into the flask and close the funnel so air doesn't escape. I will record the change in pressure over time using Logger Pro.