**Latke Lab**

**AKA**

**“Catalytic Decomposition of Hydrogen Peroxide”**

**Reminder** – Goggles must be worn at all times in the lab!

**PRE-LAB DISCUSSION:**

Catalysts are substances that speed up the rate of chemical reactions. It is believed that most catalysts work by providing alternate reaction pathways with lower activation energy than the uncatalyzed reaction.

It is possible to divide catalysts into two groups – inorganic catalysts and organic (biological) catalysts.

Biological catalysts are called **enzymes**.

Most enzymes are **protein molecules** (though recent research indicates that nucleic acids have enzymatic capacities), and they specifically catalyze **only one reaction**.

Many genetic diseases are caused either by the body’s inability to manufacture some enzyme, or a mistake in amino acid sequence of the enzyme that causes the enzyme that is produced to work slowly or not at all.

Inorganic catalysts take a wide variety of forms. Metallic surfaces often serve as catalysts for gas phase reactions, such as the conversion of nitrogen oxides back to atmospheric oxygen and nitrogen gas, as occurs in catalytic converters in automobile engines.

In this lab you will investigate the ability of one enzyme to catalyze the decomposition of hydrogen peroxide, H2O2:

**BCE:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Set up:**



**Data Table: Volume of Gas Collected versus Time for the Decomposition Hydrogen Peroxide**

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| **Time (s)** | **Volume of Gas (mL)** | **Time (s)** | **Volume of Gas (mL)** |
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**1. Graph Volume of Oxygengas versus Time for the catalytic decomposition of hydrogen peroxide.**

**2. Calculate the instantaneous rate at 4 s for oxygen on the graph.**

**3. Calculation of rate of hydrogen peroxide decomposition in g/min.**

 **Assume SATP conditions in the lab therefore:**

* **1mole of any gas will occupy a volume of 24.5 L**

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