

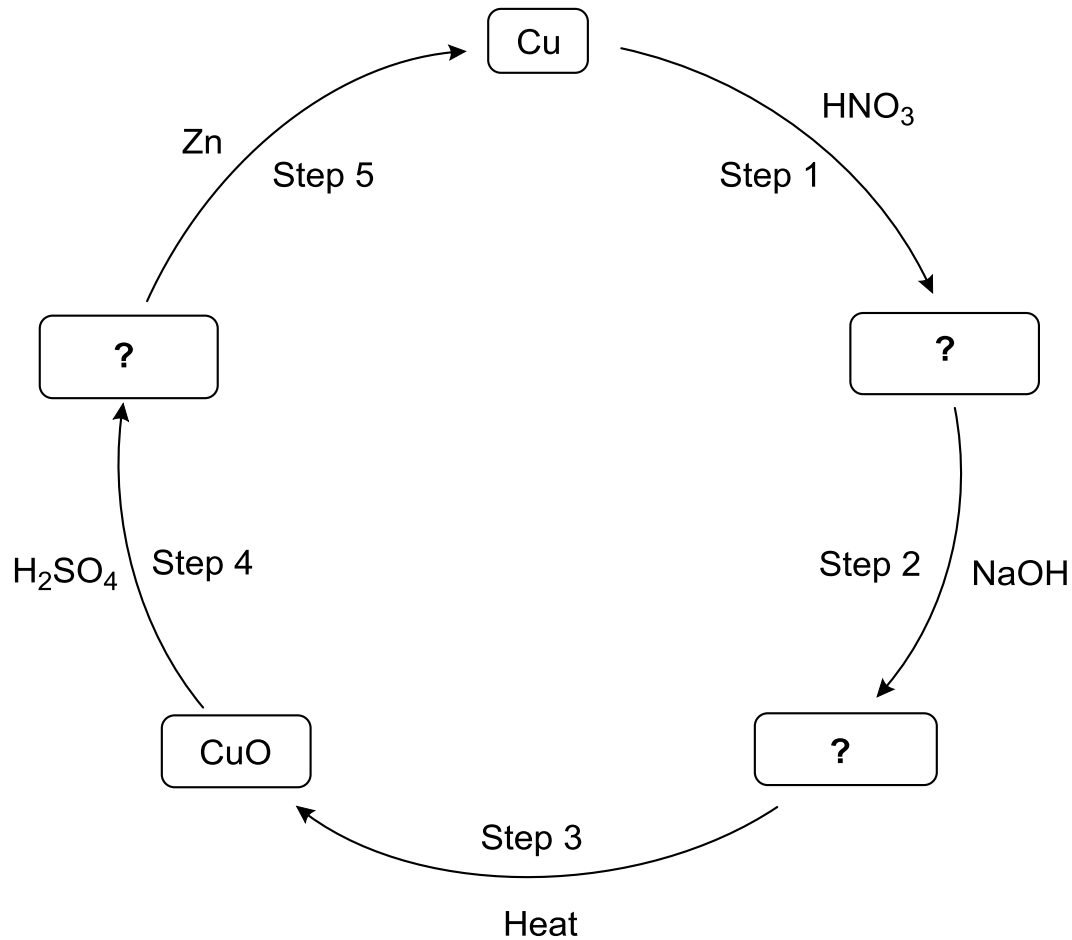
# Chemistry 1101 Lab: Cu Cycle

**Experiment investigates the various properties of copper(Cu).**

**Writing reaction equations.**

**Reactants  $\rightarrow$  Products**

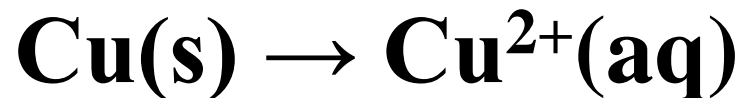
**The five step process of the copper cycle is summarized in the following diagram.**



# **Step 1: Dissolution and Oxidation**

**Oxidation process where electrons are lost.**

**Cu(s) oxidized by HNO<sub>3</sub>.**

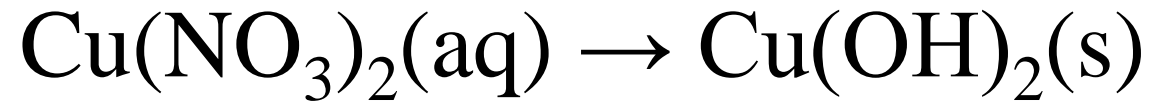


**In water HNO<sub>3</sub> exists as H<sup>+</sup> and NO<sub>3</sub><sup>-</sup>.**



## **Step 2: Conversion**

**Adding NaOH(aq). Source of Na<sup>+</sup> and OH<sup>-</sup> ions.**



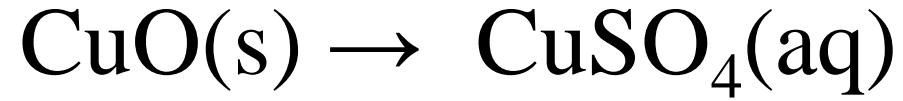
**Separated by using a centrifuge.**

## **Step 3: Decomposition**



**Done in presence of heat.**

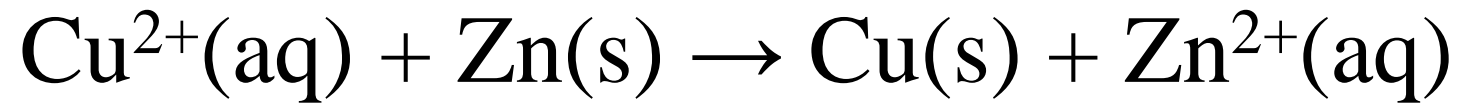
## **Step 4: Soluble Salt**



**Done in  $\text{H}_2\text{SO}_4$ . Source of  $2\text{H}^+$  and  $\text{SO}_4^{2-}$ .**

**$\text{O}^{2-}$  replaced by  $\text{SO}_4^{2-}$ .**

## Step 5: Regeneration



## **Step 6: Removal of Unreacted Zn**

**HCl added to react with any unreacted Zn(s).**

**Zn oxidized to  $\text{Zn}^{2+}(\text{aq})$ .**

**HCl source of  $\text{H}^+(\text{aq})$  and  $\text{Cl}^-(\text{aq})$ .**

**$\text{H}^+(\text{aq})$  reduced to  $\text{H}_2(\text{g})$ .**



# Calculate % Recovery

$$\textit{Percent Recovery} = \frac{\textit{mass of material recovered}}{\textit{mass of starting material}} \times 100\%$$