**CHEMISTRY EXTENDED PRACTICAL INVESTIGATION**

**Frederick Hughes - Scotch College, Melbourne - 20 June 2024**

**Materials Request Form**

**Research question & outline of experiment:**

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| How does the time soda water is exposed to O2 in air affect the concentration of CO2 using titration to determine the concentration of H+ present in the soda water?   1. Soda water was separated into 5 beakers each with 25g and left for 10, 80, 150, 220, 900 min[1]. 2. 3 drops of a phenolphthalein indicator were added to the beakers. 3. The beakers were titrated using NaOH 0.1M until a colour change was recorded and a pH probe indicated a pH of 7. 4. The concentration of CO2 (aq) (M) was calculated and graphed against time (min). |

[1]Set up during free periods before class

|  |  |
| --- | --- |
| **Independent variable** | The amount of time the soda water is exposed to O2 in air |
| **Dependent variable** | The concentration of CO2 using titration to determine the concentration of H+ present in the soda water |
| **Variables being controlled** | Concentration of the NaOH solution by ensuring the lid on the 0.1 M NaOH remains on since NaOH reacts with CO2 in the air to form Na2CO3.  Concentration of CO2 (aq) by pouring solutions carefully into beaker at a tilted angle reducing the agitation of the soda water and the effervescence of CO2 (g).  Equipment by ensuring same equipment is used each trial. |

**Requirements**

**(be specific including concentrations of solutions, volumes and size of glassware)**

**Chemicals:**

|  |  |  |
| --- | --- | --- |
| **Name of chemical** | **Concentration required** | **Amount of chemical required** |
| NaOH | 0.1 M | 200mL |
| Soda water e.g. Coles Soda Water 1.25L | -- | 500mL |
| Phenolphthalein indicator | 1% w/v | 20mL |
| Deionised water | 98% | 500mL |

**Equipment:**

|  |  |  |
| --- | --- | --- |
| **Name/Type of equipment** | **Size required** | **Number required** |
| Glass beaker[2] | 25mL | 12 |
| Glass burette | 50mL | 1 |
| White tile | -- | 1 |
| pH electrode | -- | 1 |
| Burette holder | -- | 1 |
| Stopwatch | -- | 1 |
| Funnel | 25mL | 1 |

[2] or alternatively clear plastic cups if quantity of glass beakers is unable to be sourced.

**Other Materials:**

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| Scale  Lab coat  Safety glasses  Retort stand |

**Risk Assessment**

|  |  |  |
| --- | --- | --- |
| **Substance/ Item** | **Risks involved** | **Management and prevention strategy** |
| Glassware | Breakable, lacerations | Chipped and cracked glassware should be discarded, and broken glassware should be swept up with brush and dustpan. |
| pH electrode | Breakable, lacerations | Chipped and cracked probes should be discarded, and broken probes should be swept up with brush and dustpan. |
| Phenolphthalein (1% w/v) | May cause cancer and fertility issues in high concentrations | Although in low concentrations, avoid contact with eyes, skin and clothing, cleaning with water if in contact. Use gloves, safety glasses and lab coat. |
| Sodium Hydroxide | Acidic | Avoid contact with eyes, skin and clothing, cleaning with water if in contact. Use gloves, safety glasses and lab coat. |
| White tile | Breakable | Chipped and cracked tiles should be discarded, and broken tiles should be swept up with brush and dustpan. |