Experiment 19 Acidity of Oxides

Procedure

1. Carefully heat a small piece of sodium in a dry deflagrating spoon until it oxidises. Dissolve the residue in about 100 mL of water in a beaker, and test the solution with red and blue litmus papers, identifying it as an acid or a base.

2. Burn a length of magnesium ribbon, and dissolve the residue in about 20 mL of hot water in a small beaker. Allow the mixture to cool, test the resulting solution with litmus papers and identify it as either an acid or a base.

3. Dissolve a small amount of aluminium oxide in about 20 mL of hot water in a beaker. Test the mixture with litmus papers as in the previous parts.

4. Repeat part 3 using a small amount of silicon dioxide.

5. Burn some red phosphorus in a deflagrating spoon in a gas jar which contains about 1 cm of water and red and blue litmus papers. After the combustion has finishes, note the colour of the litmus papers and identify the solution as an acid or a base.

6. Repeat part 5 using a small amount of sulphur.

7. Tabulate the melting and boiling points for the oxides of the third period elements.

Questions

1. Write balanced equations for all combustion reactions carried out.

2. Write balanced equations for the reactions of the oxides with water so that appropriate acids / bases are produced.

3. Discuss the trends in acidity of the third period elements with reference to them being metals or non-metals.

4. Discuss the trend in melting and boiling points of the oxides of the third period elements in terms of their chemical bonding.