



Identifying Positive Metal Ions

Transcript

Precipitation reactions can be used for qualitative identification of ions present in a solution.

Sodium hydroxide and ammonia solutions will cause metal ions to precipitate from solution. Metal ions can be distinguished by the colour and solubility of the precipitates formed.

These reactions are often carried out in test tubes. In this practical, the reactions are carried out on a drop scale. This method uses significantly smaller amounts of chemicals, making the practicals cheaper and more sustainable, and makes disposal simpler and less harmful to the environment.

Reactions are carried out on a plastic wallet with an instruction sheet inside.

Solutions are dispensed from dropper bottles. This helps to stop cross contamination of the solutions, and reduces the amount of setup and clearing away required.

When the reaction is finished, you will wipe up the reaction drops with paper towels and place these towels in a bucket of water. This will dilute the heavy metals down to levels appropriate for disposal.

Place the plastic wallet on the bench and carefully add two drops of each metal ion solution to the appropriate rows of reaction squares.

Now add one drop of water to the first column of metal ion solution drops. This is a control column so that you can compare drops of the same size.

Now add one drop of sodium hydroxide solution to each of the drops on the second column. Observe the formation of the precipitates and the colour of the precipitates.

For example, copper ions form a blue precipitate in the presence of hydroxide ions.

Now add five drops of sodium hydroxide solution to each of the drops on the third column. Observe the formation of the precipitates. Observe which precipitates dissolve to form solutions.

For example, the white precipitate in the aluminium ion drop disappears as excess hydroxide ions are added.

Now add one drop of ammonia solution to each of the drops on the fourth column. Observe the formation of the precipitates.

For example, iron(III) ions form a red-brown precipitate in the presence of ammonia.

Now add five drops of ammonia solution to each of the drops on the fifth column. Observe the formation of the precipitates. Observe which precipitates dissolve to form solutions.

For example, the pale-blue precipitate in the copper ion drop disappears as excess ammonia is added, and a dark blue solution forms.

Now record your observations in a results table.

