The extraction of iron on a match head

Transcript

A reactivity series is a list of elements with the least reactive at the bottom and the most reactive at the top. This list is used to predict what will happen in displacement reactions.

These reactions are involved in the extraction of many metals from their ores.

This experiment uses iron(III) oxide and a match head for visualising small scale metal extraction of iron using carbon.

This experiment works best when non-safety matches are used. These matches have a red or pink head. As the match burns, the charcoal produced provides the carbon for the reduction reaction.

First, small amounts of each chemical are placed onto watch glasses and water is put into a small beaker.

Iron metal is magnetic. To check that there is no iron to begin with the starting materials should be tested to see if they are attracted to the magnet.

The match head is moistened with water and is then rolled in the sodium carbonate, which provides an interface between the carbon and the iron(III) oxide when it melts.

Then the match head is rolled in the iron(III) oxide power, which provides the source of iron.

Make sure that the Bunsen is on the blue flame with the air-hole open. Using a pair of tongs, the match is placed in the Bunsen flame where it should flare and burn. The match should burn along half its length before being removed.

The match is then left to cool on a heat-proof surface.

Once cool, the match is placed on a watch glass and the charred part of the match is crushed using a spatula.

The resulting mixture can now be tested to see if any magnetic iron is present.

The iron metal particles follow the path of the magnet indicating that iron is present.

The iron has been extracted from its oxide using carbon and in this reaction the oxidation state of iron has been reduced from plus three to zero.