

97. Displacement reactions between metals and their salts

Topic

Reactivity series, displacement reactions, salts, transition metals.

Timing

40 min.

Description

Students can predict the reactivity series from this experiment. Alternatively, the results can be predicted using the reactivity series. Using plastic spotting tiles minimises contamination and reduces the quantities of material required.

Apparatus and equipment (per group)

- † Plastic spotting tile – these should be clean
- † Filter paper
- † Dropping pipette. Use the type of test pipette (usually fitted to Universal Indicator bottles) that does not allow squirting – eg Griffin
- † Labels or felt pen that will write on spotting tiles.

Chemicals (per group)

- † Five pieces approximate size 10 mm x 5 mm of
 - strips of zinc foil
 - strips of magnesium ribbon
 - strips of copper foil
 - strips of lead foil
- † solutions

| | |
|-----------------------------|-----------------------------------|
| zinc nitrate solution | 0.1 mol dm ⁻³ |
| magnesium nitrate solution, | 0.1 mol dm ⁻³ |
| copper nitrate solution, | 0.1 mol dm ⁻³ |
| lead nitrate solution, | 0.1 mol dm ⁻³ (Toxic). |

Teaching tips

To prevent contamination it is a good idea for students to put the solutions onto the spotting tiles sequentially (students can label each row).

Students may need guidance as to whether a reaction has occurred. This requires careful observation of the metal and the solution.

See also *Microscale Chemistry*, p. 28, London: RSC, 1997.