

Name \_\_\_\_\_ Date \_\_\_\_\_

# Worksheet 4.2: Practical on an experiment to determine the empirical formula of magnesium oxide

(TR material subchapter 4.4, main teaching ideas, activity 2)

## Analysis of results

- 1 Record your observations from the experiment, including those which could be evaluated as sources of errors.
- 2 Record raw quantitative data in a table. You need to include their units and absolute uncertainties where appropriate.
- 3 Process your raw data, show calculations clearly including all steps and determine the empirical formula of magnesium oxide in your experiment.

## Evaluation of experiment

- 4 A lid is required to cover the crucible in this experiment. Explain why the lid needs to be lifted at intervals, and why the lid should not be left off for a long period of time.
- 5 In the final step of the experiment, the crucible should be heated until its mass becomes constant. Explain why this is important.
- 6 The actual empirical formula for magnesium oxide is  $\text{MgO}$ . Comment on the accuracy of your answer to question 3 and suggest at least three systematic errors that could lead to the inaccuracy. Suggest how you can improve your experiment to reduce each of the errors suggested.
- 7 Calculate the percentage uncertainty of using a balance that measures to 0.01 g in measuring your mass of magnesium, and comment on whether this error is acceptable, or should a more precise balance be used?