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 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?