

# Determination of the Atomic Weight of Magnesium CHEM 101

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## 1 Objective

To determine the atomic weight of magnesium via its reaction with oxygen and to study the stoichiometry of the reaction (as defined in 1.1):

### 1.1 Definitions

**Stoichiometry** The relationship between the relative quantities of substances taking part in a reaction or forming a compound, typically a ratio of whole integers [1] .

**Atomic mass** The mass of an atom of a chemical element expressed in atomic mass units. It is approximately equivalent to the number of protons and neutrons in the atom (the mass number) or to the average number allowing for the relative abundances of different isotopes.

## 2 Experimental Data

Mass of empty crucible

Mass of crucible and magnesium before heating

Mass of crucible and magnesium oxide after heating Balance used

Magnesium from sample bottle

### 3 Sample Calculation

### 4 Results and Conclusions



Figure 1: Figure caption.

### 5 Discussion of Experimental Uncertainty

experimental uncertainties have fortuitously cancelled one another.

### 6 Answers to Definitions

- a. The *atomic weight of an element* is the relative weight of one of its atoms compared to C-12 with a weight of 12.0000000. . . , hydrogen with a weight of 1.008, to oxygen with a weight of 16.00. Atomic weight is also the average weight of all the atoms of that element as they occur in nature.
- b. The *units of atomic weight* are two-fold, with an identical numerical value. They are g/mole of atoms (or just g/mol) or amu/atom.
- c. *Percentage discrepancy* between an accepted (literature) value and an experimental value is

$$\frac{\text{experimental result} - \text{accepted result}}{\text{accepted result}}$$

### References

- [1] J. M. Smith and A. B. Jones. *Chemistry*. Publisher, 7th edition, 2012.