

《物理化学实验指导》

图书基本信息

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版权页：插图：(4) If the leading digit is equal to or greater than 8, increase the number of significant figure by one. For example, we can take the number of 9.15 as 4 significant figures in calculation. (5) In addition and subtraction, retain as many decimal figures as are given in the number having the fewest decimals. In multiplication and division, the result should be retained to have the same number of significant figures as in the components with the least number of significant figures.

5. Data reporting

Most commonly, the data obtained in physical chemistry are presented in the form of tables, graphs or equations.

5.1. Tables

After experiment, organize the data observed into a table according to the relationship between independent variables and dependent variables. It is easy to create a table and make comparison among a list of data. The primitive data are commonly presented in a table. There are some guidelines for creating a good table.

- (1) The table should have a title that provides a short description of the table's purpose.
- (2) The columns and rows should be labeled and the physical name and units must be indicated.
- (3) The data reported in table should be in their simplest form. If a same power of ten is used, it should be indicated in the column heading.
- (4) The decimal point of the numbers in a column should be aligned.
- (5) In general, the condition of experiment or surroundings should be specified in table, such as room temperature, atmospheric pressure, date and time of the measurement.

Presenting the data in the form of table holds the advantages of simple. It is easier for comparison and reference. The raw data from the experiment are usually given in the form of a table.

5.2. Graphs

5.2.1. Use of graphs

The use of graphs in presenting experiment data is called graphic methods. Graphing techniques are very useful in experimental physical chemistry mainly to

- (1) give a pictorial presentation of the variance regularity of the data;
- (2) reveal maxima, minima, inflection points, or other significant features;
- (3) perform direct differentiation by drawing tangents to a curve, accomplish integration, and so on.

Some examples of uses of graphs are as follows.

- (1) Interpolation method Use the raw data from the experiment to plot the graph. The curve shows the relationship between dependent variable and independent variable. An intermediate value of one variable (dependent or independent), can be obtained from the curve. For example, in drawing a phase diagram of a binary liquid system of cyclohexane and ethanol, the composition of vapor and liquid at equilibrium are obtained by interpolation method.

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