# Writing Abstracts

### Abstracts

Abstracts are found at the beginning of journal articles, research papers, reports, theses, and dissertations. An abstract is a complete but concise and informative account of your work. i.e., a condensation that makes sense without reference to the full document. The abstract enables readers to quickly and accurately identify the substance of your work and to decide its relevance to their own interests. In the professional arena, your abstract may be available on searchable on-line abstract databases. Reading your abstract may encourage others to obtain and read your full article or report.

The length of the abstract should be short, usually less than 250 words (often considerably less). The abstract consists of 4 parts: statement of the problem or purpose of the study, methods, results, and implications. The proportion of the abstract taken by each part varies depending on the nature of your work and the audience for which the abstract is intended.

**Problem**: Identify the particular research problem under investigation, the purpose of the study, and any specific research objectives or hypotheses. However, you should avoid saying, "*The purpose of this experiment was…*"

**Methods**: Outline the approach you took or the methods you used to investigate the problem.

**Results**: Give any important results. Be specific, not vague. Quantify if possible; avoid terms such as "most" or "some" if you have the specific numbers. State the major interpretations and findings, how the findings relate to the original research problem, and any limitations on the results.

**Implications**: State the contribution of the work and its implications. There may be implications for associated problems, or for previous studies, e.g., reinterpretation of a previous model may be necessary in the light of your findings. Do your results have general or specific application or relevance?

Below are two examples of a well-written abstracts for introductory chemistry experiments.

**Example 1:**

*The heat capacity of a series of organic liquids with homologous structures was measured by solution calorimetry. The known heat capacity of water (75.3 J/mol K) was used to find the calorimeter constant, which was determined to be 237 J/K. The heat capacities of methanol and ethanol were determined to be 78.4 J/mol K and 108 J/mol K, respectively. These results indicate that the heat capacity of a liquid increases as the number of atoms in the molecule (molecular complexity) increases.*

**Example 2:**

*The precision of glassware was investigated by determining the densities of several soft drinks. A graduated cylinder, buret and analytical balance were used to gather volume and mass data for an assigned aliquot of either regular or diet 7Up. This data was pooled with results from other researchers investigating different value aliquots. The combined data was plotted mass vs. volume and a linear least squares fit to the data indicated a density of 0.9890 g/mL ($R^2$ = 0.997) for Diet 7up using a buret and 0.986 g/mL ($R^2$ = 0.994) using a graduated cylinder. The combined data also indicated a density of 1.026 g/mL ($R^2$ = 0.9898) for 7up using a buret and 1.01 g/mL ($R^2$ = 0.986) using a graduated cylinder. Comparison of the reported densities indicate that the diet 7up has a lower density than regular 7up and one can obtain more precise data using a buret to measure volumes.*

**References**

Tippett, J. Mark,
http://www.earthresearch.com/index.shtml, 2003.