

CHEM 334 Quantitative Analysis Laboratory

Creation of a Publication-Quality Report & Components

Introduction

Quantitative data demands insightful presentation. It is possible to tabulate data and very often this is the most informed choice. Other times a pattern within the data can be portrayed most deliberately and immediately in the mind of the viewer by a graphical representation. However, it is all too often true that a graphical representation is performed with little care, craft, judgment, perception, understanding and regard. There are many detailed aspects of graphical representation that are under control of the creator of the figure and must be attended to if the goals of the communication intended for the figure are to be accomplished.

This project is designed to present to the student's consideration a number of important issues related to the creation of a "successful" report including high-quality form, figures, tables and citations. A two-page, two-column Word document will be created and converted to PDF format for printing and submission. A figure demonstrating the pressure-volume relationship of one mole of helium gas, held at 300 K and displaying ideal gas behavior will be created by the student. SI units will be used throughout. A suitable succinct, clear figure caption will be added. A table will be created. "Nonsense" text will be used to fill in the pages. A complete and proper document title will be included.

Procedures

Create A Pair of Waves Containing the Simulated Data: Using Igor Pro (Wavemetrics, Inc., Oswego, OR, <http://wavemetrics.com/>) create two waves, containing pairs of pressure-volume values. Create a graph containing these values. Include a sufficient number of values so that when drawn with straight-line segments between them the curve appears smooth. Select ranges for the pressure and volume values that permit an attractive presentation. Use reasonable sets of axis values and tick marks. Place clear axes labels with corresponding units. Adjust all of the line weights to provide a balanced appearance.

Adjust the aspect ratio of the figure and save it as a high-resolution ".png" file. Import this file into a Word document. Add a complete title (student name, course number, section number, date of submission, document title). Include "nonsense" text to fill.

Convert this Word document into a PDF document. Print this PDF document (not the Word document) and submit this PDF document on the course web site.

References

Tufte, E.R., "Envisioning Information" (1990), Graphic Press, CT, Chapters 1 and 6.

Preparation of a High-Quality Report
Joseph DiVerdi
CHEM 334 – L03
2 February 2035

INTRODUCTION

The purpose of this experiment is to demonstrate the form of and methods for creating a high-quality report that is appropriate for submission in a university-level science course. The report here uses American Chemical Society (ACS) style¹ and is suitable for many types of technical reports and with a few changes other typed of professional reports.

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MATERIALS & METHODS

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Table 1. Standardization of Sodium Hydroxide Titrant^a

Trial	Sample Mass(g)	Titration Volume (mL)	Calculated Concentration (M)
1	0.1234	12.20	0.0125
2	0.1254	10.45	0.0256
3	0.1998	9.12	0.0199
4	0.1580	5.20	0.0050
Average ^b			0.0156±0.0009

^aConcentration is calculated based on the assumption of 100% purity of sample.

^bAverage is reported with ± one standard deviation.

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RESULTS

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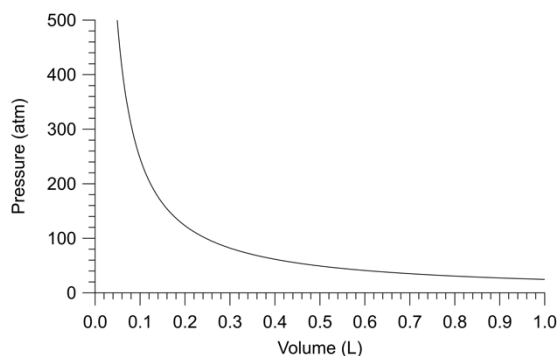


Figure 1. Pressure-volume relationship of one mole of helium assuming ideal conditions.

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DISCUSSION

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ACKNOWLEDGEMENTS

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REFERENCES

1. The ACS Style Guide; Coghill, A.M., Garson, L.R. Ed.; American Chemical Society: Washington, DC, 2006.
2. DiVerdi, J.A; Creation of a Publication Quality Report.
https://sites.chem.colostate.edu/diverdi/C334/experiments/01_creation_of_a_publication_quality_report.pdf