

The Analytical Chemistry Laboratory Companion

Michael D. Holloway



Sticky Note
Adhesive Failure...Why?
Must Do:

- ✓ Wet Chemical Analysis
- ✓ Instrumental Chemical Analysis
- ✓ Use Statistical Tools
- ✓ Explore Chemical Synthesis
- ✓ Conduct Designed Experiments

The Analytical Chemistry Laboratory Companion

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Preface

This work serves several functions. Foremost, it is the intent to serve as a reference guide that professional chemists, graduate students, and those interested in analytical chemistry can consult when they need quick explanations or refreshers on specific topics within a subject area as well as laboratory operational insight as well as the structures of designing experiments and the use of statistics to gain increased accuracy, precision, repeatability, and reproducibility of data. It introduces students of chemistry to chemical analysis as an educational tool designed to help grasp the fundamental concepts and principles of analytical chemistry. This work will also provide for more in-depth and advanced study and lay the groundwork and build the necessary background knowledge.

This companion provides a concise examination of the various analytical tools used for chemistry and defines the basic analytical instrument principles, techniques, and applications as well as exploring statistical tools useful in data interpretation, test result reporting, and common root cause for faulty data with suggested remedies. The introduction provides a concise guide on developing standard operating procedures, laboratory safety, how to decide on which instrumental analytical methods to use, establishing a designed experiment (DoX), establishing a budget, and common statistical tools useful for data interpretation.

This work covers both wet chemical and instrumental analysis. The wet chemistry section covers glassware, reagents, solvents, units of measures, pitfalls to avoid, remedies that can be implemented, report formats, and applications. The instrumental analysis section covers principles, techniques, components, applications, specific statistical tools, test reporting, common root cause for faulty data and suggested remedies, and abbreviations. The work commences with laboratory management, statistical tools, a review of chemical synthesis, chemistry designed experiment structures, and References along with literary reviews.

This work is built to provide quick and accurate information that serves to inform as well as encourage chemists. The format is designed for easy reading and comprehension. Consider this work the best notes from the professor of analytical chemist who also runs a professional laboratory. Happy experimenting!

Michael D. Holloway

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