

ANION ANALYSIS

OBJECTIVES FOR THE EXPERIMENT

The student will be able to do the following:

1. Write a general description of the qualitative analysis technique for identification of unknown substances.
2. Plan a procedure for the analysis of an unknown solution of an anion and describe that procedure with a flow chart.
3. Identify different anions using a qualitative analysis technique.

BACKGROUND

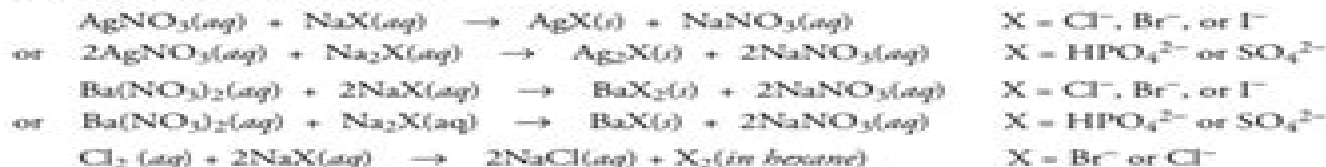
There are two main branches of analytical chemistry, qualitative analysis and quantitative analysis. Qualitative analysis involves the experimental determination of the nature of the substances in a sample. It answers the question, what's in there? Quantitative analysis involves the determination of how much of a substance is present in a sample. A chemist might test the water downstream from an out-fall of a chemical plant. The first step would be to do qualitative analysis techniques to determine whether it contains pollutants. The next step would be to use quantitative analysis techniques to find out if the concentrations were high enough to cause concern.

The goal of this experiment is to develop techniques for identifying unknown substances. You will identify unknown solutions as containing one of the following: Cl^- , Br^- , I^- , HPO_4^{2-} , or SO_4^{2-} .

You will do the following general steps.

1. You will first do tests with solutions that you know contain one of the anions.
 - a. You will determine how the anions react with silver nitrate and barium nitrate.
 - b. You will determine whether precipitates dissolve in acidic solutions.
 - c. You will determine how Br^- and I^- react with chlorine, Cl_2 .
2. Based on the observations made on these "knowns", you can devise a plan to analyze each of your unknowns. You will describe this plan with a flow chart. See below.
3. You will then do tests on three unknown solutions to determine which anion is in each solution.

The general reactions in this experiment consist of two double displacement reactions and one oxidation-reduction reaction as shown below:



In the silver nitrate and barium nitrate tests, you will watch for the possible formation of the precipitates AgX , Ag_2X , BaX_2 , or BaX . The colors of these precipitates can be quite helpful. The appearance of any solids in these tests will show that a reaction has occurred. Even a slight cloudiness is an indication of a positive test.

If a precipitate forms in a silver nitrate or barium nitrate test, you will add nitric acid to see if the ionic compound will dissolve. If the anion is basic, the ionic compound should dissolve. When a solid ionic compound precipitates from a solution, the ions do not remain permanently in the ionic solid. Ions are constantly escaping from the solid into solution, and ions are constantly colliding with the solid and returning to the solid. These two changes occur at the same rate, so there is not normally any net change in the amount of solid in

Anion Analysis Lab Report

Katrin Zwirgmaier

A red circular graphic with a gradient, appearing as a stylized arrow or a partial circle, located to the right of the author's name.

Anion Analysis Lab Report:

A Laboratory Program for General Chemistry Joshua Romine Morton, Donald Roop Clippinger, Lawrence Powell Eblin, 1944 Pistachio Production Manual Louise Ferguson, David Haviland, 2016-12-02 The long awaited Pistachio Production Manual from the University of California is here The combined knowledge of 42 UC and industry experts and years of research and field trials are brought to fruition in this long awaited 321 page manual From an overview of the state of the industry to physiological disorders the 8 part manual covers everything you need to know Chapters cover topics including orchard design rootstocks and cultivars planting and training young trees weed insect mite and vertebrate management irrigation and salinity management disease management and physiological disorders including alternate bearing nut blanking and shell splitting Over 200 color photographs and 60 diagrams charts and tables illustrate key points The back cover includes a photographic guide to the developmental stages of the pistachio *Prune Production Manual* Richard P. Buchner, 2012-05-16 Written in easy to read non technical language this manual is the perfect field application guide Inside you ll find the professionalism expertise and science based answers you ve come to expect from the University of California with contributions from more than 40 Cooperative Extension professionals UC faculty USDA scientists and highly skilled prune industry experts Chapters include An industry overview A detailed description of prune biology Information on understanding soils varieties irrigation and fertilization Pest management techniques A lesson on harvest and postharvest management The breadth of expertise and knowledge contained in the 320 pages of this manual along with the more than 300 photos and 56 color illustrations make this one of the most comprehensive prune production manuals in the world

Laboratory Manual for Principles of General Chemistry J. A. Beran, Mark Lassiter, 2022-08-16 Laboratory Manual for Principles of General Chemistry 11th Edition covers two semesters of a general chemistry laboratory program The material focuses on the lab experiences that reinforce the concepts that not all experimental conclusions are the same and depend on identifying an appropriate experimental procedure selecting the proper apparatus employing the proper techniques systematically analyzing and interpreting the data and minimizing inherent variables As a result of good data a scientific and analytical conclusion is made which may or may not be right but is certainly consistent with the data Experiments write textbooks textbooks don t write experiments A student s scientific literacy grows when experiences and observations associated with the scientific method are encountered Further experimentation provides additional cause effect observations leading to an even better understanding of the experiment The 11th edition s experiments are informative and challenging while offering a solid foundation for technique safety and experimental procedure The reporting and analysis of the data and the pre and post lab questions focus on the intuitiveness of the experiment The experiments may accompany any general chemistry textbook and are compiled at the beginning of each curricular unit An Additional Notes column is included in each experiment s Report Sheet to provide a space for recording observations and data during the experiment Continued

emphasis on handling data is supported by the Data Analysis section **Laboratory Manual for Principles of General Chemistry** Jo Allan Beran,2010-11-01 This new edition of the Beran lab manual emphasizes chemical principles as well as techniques The manual helps students understand the timing and situations for the various techniques The Beran lab manual has long been a market leading lab manual for general chemistry Each experiment is presented with concise objectives a comprehensive list of techniques and detailed lab intros and step by step procedures *Environmental Monitoring at Love Canal* United States. Environmental Protection Agency. Office of Research and Development,1982 Walnut Production Manual David E. Ramos,1997-10-01 **Report summaries** United States. Environmental Protection Agency,1983

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Handbook of Radioactivity Analysis Michael F. L'Annunziata,2012-08-16 Authoritative reference providing the principles practical techniques and procedures for the accurate measurement of radioactivity **Selected Water Resources Abstracts** ,1979 **Diagnostic Medicine** ,1985 **The Office of Environmental Management Technical Reports: A Bibliography** ,2001 The Office of Environmental Management s EM technical reports bibliography is an annual publication that contains information on scientific and technical reports sponsored by the Office of Environmental Management added to the Energy Science and Technology Database from July 1 1994 through June 30 1995 This information is divided into the following categories Focus Areas Cross Cutting Programs and Support Programs In addition a category for general information is included EM s Office of Science and Technology sponsors this bibliography U.S. Government Research & Development Reports ,1971 *Nuclear Science Abstracts* , *Pacific Northwest Laboratory Annual Report to the DOE Assistant Secretary for Environment* Pacific Northwest Laboratory,1979 **Tietz Textbook of Laboratory Medicine -**

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