Periodic Trends and the Properties of the Elements Chemistry Lab #7

Name	Date		
Section			

The periodic table is the most recognized symbol of chemistry across the world. It is a valuable tool that allows scientists not only to classify the elements but also to explain and predict their properties. Similarities and differences among the elements give rise to so-called periodic trends, both across rows and within columns of the periodic table. Recognizing periodic trends in the physical and chemical properties of the elements is key to understanding the full value of the periodic table.

Purpose

The purpose of this experiment is to identify periodic trends in the activity and solubility of the alkaline earth metals. In Part A, the reactions of magnesium, calcium, and aluminum with water and acids will be compared in order to determine the trend in metal activity within a group (Mg vs Ca) and across a period (Mg vs Al) in the periodic table. In Part B, the solubility of magnesium, calcium, strontium, and barium compounds will be studied and used to identify an unknown alkaline earth metal.

Pre-Lab Questions:

- Read the entire procedure and safety precautions. Do you think extra pieces of magnesium and calcium metal should be disposed of down the drain? Why or why not?
- 2) The ionization energy of an element is defined and the amount of energy required to remove an electron from an individual atom. The following table gives the ionization energy (in units of kilojoules per mole) for five metals, listed in alphabetical order. Locate each of these metals on the periodic table and arrange them in order of rows and columns as in the periodic table.
 - a) Describe the trend in the ionization energy of elements within a group.
 - b) Describe the trend in the ionization energy of elements across a period.

Metal	Calcium	Magnesium	Potassium	Sodium	Strontium
lonization Energy	590	738	419	496	549

Materials.

Aluminum foil
Magnesium ribbon
Calcium turnings
Sodium sulfate, 1 M Na₂SO₄
Magnesium chloride, 0.1 M MgCl₂
Strontium chloride, 0.1 MSrCl₂
Barium chloride, 0.1 M BaCl₂
Unknown metal chloride
Matches

HCI, 0.5 M
Potassium iodate, 0.2 M KIO,
Sodium carbonate, 1 M Na₂CO,
Calcium chloride, 0.1 M CaCl₂
Thermometer
Forceps
Litmus paper, red
Pipets
Reaction plate

Safety:

Calcium and magnesium are reactive, flammable, and possible skin irritants. HCI is toxic and corrosive to the skin and eyes.

Trends In The Periodic Table Lab Report

U.S. Atomic Energy Commission

Trends In The Periodic Table Lab Report:

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 Handbook of Formative Assessment Heidi Andrade, Gregory J. Cizek, 2010-04-02 Formative assessment has recently become a focus of renewed research as state and federal policy makers realize that summative assessments have reached a point of diminishing returns as a tool for increasing student achievement Consequently supporters of large scale testing programs are now beginning to consider the potential of formative assessments to improve student achievement The mission of this handbook is to comprehensively profile this burgeoning field of study Written by leading international scholars and practitioners each chapter includes a discussion of key issues that dominate formative assessment policy and practice today as well as those that are likely to affect research and practice in the coming years Key features include Comprehensive nineteen chapters cover all aspects of formative assessment including classroom assessment large scale applications technological applications applications for special needs students K 12 and post secondary applications psychometric considerations case studies and discussion of alternative assessment formats such as portfolios and performance assessments Integrative thoughtful attention is given to the integration of large scale and classroom assessments Practical provides practical guidance on how to conduct formative assessments that generate credible information to guide instruction Global provides perspectives from leading international scholars and practitioners whose expertise spans diverse settings student populations and educational systems Accessible Style although grounded in the latest research the book s style and tone has been carefully crafted to make it accessible to both the textbook and professional markets It will also be a critical reference book for researchers in teacher preparation

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international level is totally uncontrolled In the area of medical or health informatics these questions are more serious Lack

of information false or inadequate information as well as improper interpretation of accurate information may seriously harm patients And the process may go out of control of the physician i e patients can treat themselves just by visiting some health sites on the net Everybody may throw a message in a bottle in information flood and everybody may pick up messages at any time Can we do anything to ensure that all messages are valid Can we guarantee that our messages reach the intended audience Can we secure that content has not changed on its way Do we know that people getting our messages will interpret them correctly Are we able to understand the intention of a sender when we get a message totally out of context These questions build up the framework of MIE2002 <u>Energy Research Abstracts</u>, 1989 **TID.**, 1955 **Laboratory Manual** Jo A. Beran, 1990 <u>Chemistry McGraw-Hill Staff, 2001-07</u> <u>Journal of the Electrochemical Society</u> Electrochemical Society, 1956 Issues for 19 contain separately paged section consisting of editorials and various special features

Information sources U.S. Atomic Energy Commission,1955 Merrill Chemistry Robert C. Smoot,Smoot,Richard G. Smith,Jack Price,1998 Selected Reference Material, United States Atomic Energy Program: Information sources U.S. Atomic Energy Commission,1955 Resources in Education, 1984-10

Unveiling the Power of Verbal Beauty: An Mental Sojourn through Trends In The Periodic Table Lab Report

In some sort of inundated with displays and the cacophony of quick conversation, the profound energy and mental resonance of verbal beauty often diminish in to obscurity, eclipsed by the continuous assault of noise and distractions. However, nestled within the lyrical pages of **Trends In The Periodic Table Lab Report**, a charming work of fictional beauty that pulses with natural thoughts, lies an remarkable journey waiting to be embarked upon. Composed by way of a virtuoso wordsmith, that enchanting opus instructions visitors on a mental odyssey, lightly exposing the latent possible and profound influence embedded within the intricate web of language. Within the heart-wrenching expanse with this evocative analysis, we shall embark upon an introspective exploration of the book is key subjects, dissect its charming writing style, and immerse ourselves in the indelible impact it leaves upon the depths of readers souls.

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