

Periodicity Lab

HS-PS1-1

PERIODICITY LAB

Lesson Duration: 60 Minutes + 10 Introductory Lab Prep

Description

This lab has students looking at the reactivity of alkaline earth metals with sulfate using well plates. Students will be creating various solutions of alkaline earth metal solutions and testing these solutions to gauge relative reactivity at different concentrations. In addition to doing the groups for each element. After collecting their data, they will answer various lab analysis questions about reactivity trends of metals, draw their models, and determine how this trend would differ for non-metals.

Use the included Periodicity Lab Prep Sheet to put your lab together!

This product comes with an answer key!

NGSS Alignment:

Performance Expectation: HS-PS1-1 Use the periodic table as a model to predict the relative reactivity of elements based on the patterns of electrons in the outermost energy level of atoms.

Disciplinary Core Idea: PS1-4 Structure and Properties of Matter: Every atom has a charged substructure consisting of a nucleus, which is made of protons and neutrons, surrounded by electrons. The periodic table orders elements horizontally by the number of protons in the atom's nucleus and groups those with similar chemical properties in columns. The repeating patterns of this table reflect patterns of outer electron states.

Cross-Cutting Concepts: Different patterns may be observed at each of the scales at which a system is studied and can provide evidence for causality in explanations of phenomena.

Science and Engineering Practices: Use a model to predict the relationships between systems or between components of a system.

Lesson Objectives

Students will be able to...

1. Identify trends in reactivity of metals and non-metals in the periodic table.

Name _____ Date _____ Period _____

Periodicity Lab Why?

The periodic table can be used to predict the physical and chemical properties of elements and their compounds. This lab activity investigates the reactivity of group 2A ions (Alkaline Earth Metals) with the sulfate ion, SO_4^{2-} . By varying the amount of each group 2A ion present, you will determine the reactivity of each ion, and determine a pattern based on the position of the ion in the periodic table.

In this lab, we will observe the results of reactions involving alkaline earth metal ions and determine a pattern of reactivity of the elements in the family.

Materials:

- | | | |
|----------------|---------------------------|---------------------------|
| • Goggles | • Test tubes | • 0.10 M Sr^{2+} |
| • Well plate | • Distilled water | • 0.10 M Ba^{2+} |
| • Pipets | • 0.10 M Mg^{2+} | • 0.10 M NO_3^- |
| • Filter paper | • 0.10 M Ca^{2+} | |

Procedure:

1. Obtain and put on goggles.
2. Using a pipet, place ~10 drops of distilled water into wells A2-A5, B2-B5, C2-C5, and D2-D5. Wells A1, B1, C1, and D1 should be empty.
3. Using a different pipet for each ion solution, place ~20 drops of Mg^{2+} into well A2, ~20 drops of Ca^{2+} into well B2, ~20 drops of Sr^{2+} into well C2, and ~20 drops of Ba^{2+} into well D2.
4. Using the 10g pipet, remove half the solution from A2 and place it into well A1. Mix the solution in A2 with a test tube.
5. Using the 10g pipet, remove half the solution from A2 and place it into well A3. Mix the solution in A2 with the same test tube.
6. Using the 10g pipet, remove half the solution from A2 and place it into well A4. Mix the solution in A2 with the same test tube.
7. Using the 10g pipet, remove half the solution from A2 and place it into well A5. Mix the solution in A2 with the same test tube.

Periodicity Lab Answer

M Lipman

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

Periodicity Lab Answer:

The Top Books of the Year Periodicity Lab Answer The year 2023 has witnessed a remarkable surge in literary brilliance, with numerous engrossing novels enthralling the hearts of readers worldwide. Lets delve into the realm of popular books, exploring the captivating narratives that have charmed audiences this year. The Must-Read : Colleen Hoover "It Ends with Us" This touching tale of love, loss, and resilience has captivated readers with its raw and emotional exploration of domestic abuse. Hoover expertly weaves a story of hope and healing, reminding us that even in the darkest of times, the human spirit can prevail. Uncover the Best : Taylor Jenkins Reids "The Seven Husbands of Evelyn Hugo" This spellbinding historical fiction novel unravels the life of Evelyn Hugo, a Hollywood icon who defies expectations and societal norms to pursue her dreams. Reids compelling storytelling and compelling characters transport readers to a bygone era, immersing them in a world of glamour, ambition, and self-discovery. Discover the Magic : Delia Owens "Where the Crawdads Sing" This evocative coming-of-age story follows Kya Clark, a young woman who grows up alone in the marshes of North Carolina. Owens crafts a tale of resilience, survival, and the transformative power of nature, entrancing readers with its evocative prose and mesmerizing setting. These top-selling novels represent just a fraction of the literary treasures that have emerged in 2023. Whether you seek tales of romance, adventure, or personal growth, the world of literature offers an abundance of compelling stories waiting to be discovered. The novel begins with Richard Papen, a bright but troubled young man, arriving at Hampden College. Richard is immediately drawn to the group of students who call themselves the Classics Club. The club is led by Henry Winter, a brilliant and charismatic young man. Henry is obsessed with Greek mythology and philosophy, and he quickly draws Richard into his world. The other members of the Classics Club are equally as fascinating. Bunny Corcoran is a wealthy and spoiled young man who is always looking for a good time. Charles Tavis is a quiet and reserved young man who is deeply in love with Henry. Camilla Macaulay is a beautiful and intelligent young woman who is drawn to the power and danger of the Classics Club. The students are all deeply in love with Morrow, and they are willing to do anything to please him. Morrow is a complex and mysterious figure, and he seems to be manipulating the students for his own purposes. As the students become more involved with Morrow, they begin to commit increasingly dangerous acts. The Secret History is a exceptional and thrilling novel that will keep you wondering until the very end. The novel is a warning tale about the dangers of obsession and the power of evil.

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Periodicity Lab Answer Introduction

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