

POGIL: Periodic Trends in Atomic Properties

Information

Properties such as the size of an atom (atomic radius), the energy required to remove an electron from an atom (ionization energy), and the energy associated with the addition of an electron to a gaseous atom (electron affinity) can be understood in terms of the electron configuration of the atom and a competition between *electron-nucleus attraction* and *electron-electron repulsion*.

Preliminary Activity - Complete the orbital diagrams for the ground state configuration.

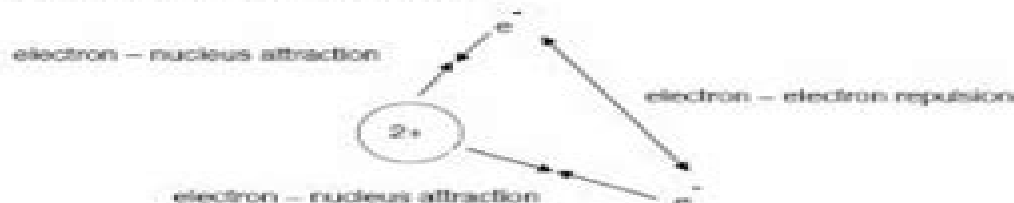
	1s	2s	2p		1s	2s	2p
H				C			
He				N			
Li				O			
Be				F			
B				Ne			

Model 1: Electron Ionization & Capture and Electrostatic Interactions

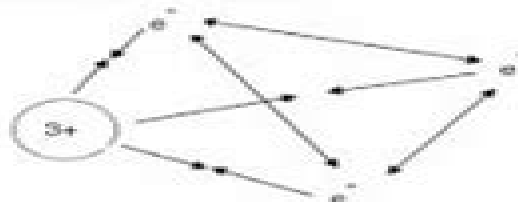
Reaction Equation for Electron Ionization: $X \rightarrow X^+ + e^-$ $\Delta E = 1^{\text{st}}$ ionization energy

Reaction Equation for Electron Capture: $X + e^- \rightarrow X^-$ $\Delta E = \text{electron affinity}$

Dominant inter-particle forces in helium:



Dominant inter-particle forces in lithium:



Answer Periodic Trends And Atomic Structure Pogil

F.H. Loring



Answer Periodic Trends And Atomic Structure Pogil:

Atoms, Molecules & Elements: Patterns In the Periodic Table Gr. 5-8 George Graybill, 2015-10-01 This is the chapter slice Patterns In the Periodic Table from the full lesson plan Atoms Molecules Elements Young scientists will be thrilled to explore the invisible world of atoms molecules and elements Our resource provides ready to use information and activities for remedial students using simplified language and vocabulary Students will label each part of the atom learn what compounds are and explore the patterns in the periodic table of elements to find calcium Ca chlorine Cl and helium He through hands on activities These and more science concepts are presented in a way that makes them more accessible to students and easier to understand Written to grade and using simplified language and vocabulary and comprised of reading passages student activities crossword word search comprehension quiz and color mini posters our resource can be used effectively for test prep and your whole class All of our content is aligned to your State Standards and are written to Bloom s Taxonomy and STEM initiatives Choice ,2009 The HISTORY of the ATOM the PERIODIC TABLE and RADIOACTIVITY Alex Kimmons, 2021-05-15 THE HISTORY OF THE ATOM THE PERIODIC TABLE and RADIOACTIVITY monochrome Chemistry is an interesting and fundamental branch of science because it gives us the chance to explain the secrets of nature What is water What do we use in our cars as fuel What is aspirin What are perfumes made of These kinds of questions and their answers are all part of the world of chemistry There is no industry that does not depend upon chemical substances the petroleum pharmaceuticals garment aircraft steel and electronics industries for example as well as agriculture all utilize the science of chemistry This book helps everyone to understand nature However one does not need to be a chemist or scientist to understand the simplicity within the complexity around us The aim was to write a modern up to date book where students and teachers can get concise information about the structure of substances Sometimes reactions are given in the detailed form but in general excessive detail has been omitted The book is designed to introduce fundamental knowledge in three areas the history of the atom the periodic table and radioactivity We will study the historical development of atomic structure theories the tendencies of elements in periods and groups and the types of emissions and uses of radioactivity ,

ATOMIC STRUCTURE High School Chemistry Curriculum Bud Morgan, 2025-07-09 Welcome to our comprehensive guide to Atomic Structure designed specifically for high school students studying chemistry In this book we will explore the fascinating world of atoms the basic building blocks of matter and delve into the complexities of their structure Chapter 1 provides a solid foundation by introducing the concept of atoms and their historical significance in the development of modern chemistry We will examine the key scientists who contributed to our understanding of atomic structure from Democritus to Thomson Rutherford and Bohr Moving on to Chapter 2 we will explore the structure of the atom in more detail including the subatomic particles that make up an atom protons neutrons and electrons We will also discuss the concept of atomic number atomic mass and isotopes In Chapter 3 we will delve into the arrangement of electrons within an atom s

electron cloud including energy levels sublevels and orbital shapes We will also discuss the principles of electron configuration and how it impacts an atom's chemical properties Chapter 4 will focus on the periodic table and how it organizes elements based on their atomic structure We will explore periodic trends such as atomic radius ionization energy and electron affinity and discuss how these trends are related to an element's position on the table In our final chapter we will discuss the significance of atomic structure in various chemical reactions including bonding stoichiometry and the behavior of gases We will also explore the importance of understanding atomic structure in fields such as biochemistry environmental science and materials science Throughout this book we will provide clear explanations helpful illustrations and interactive activities to reinforce key concepts Whether you are a visual learner a hands on learner or a theoretical learner this book is designed to meet your needs We hope that this book will not only enhance your understanding of atomic structure but also inspire you to further explore the wonders of chemistry So let's dive in and unlock the mysteries of the atom together

Atoms, Molecules & Elements: What Are Atoms? Gr. 5-8 George Graybill, 2015-10-01 This is the chapter slice What Are Atoms from the full lesson plan Atoms Molecules Elements Young scientists will be thrilled to explore the invisible world of atoms molecules and elements Our resource provides ready to use information and activities for remedial students using simplified language and vocabulary Students will label each part of the atom learn what compounds are and explore the patterns in the periodic table of elements to find calcium Ca chlorine Cl and helium He through hands on activities These and more science concepts are presented in a way that makes them more accessible to students and easier to understand Written to grade and using simplified language and vocabulary and comprised of reading passages student activities crossword word search comprehension quiz and color mini posters our resource can be used effectively for test prep and your whole class All of our content is aligned to your State Standards and are written to Bloom's Taxonomy and STEM initiatives

Atomic and Molecular Structure Joel Chaffee, 2011-01-15 Learn about the atom what it is the people responsible for helping us understand it and how it affects us in the world today

Atomic Theories F.H. Loring, 2014-05-09 Summarising the most novel facts and theories which were coming into prominence at the time particularly those which had not yet been incorporated into standard textbooks this important work was first published in 1921 The subjects treated cover a wide range of research that was being conducted into the atom and include Quantum Theory the Bohr Theory the Sommerfeld extension of Bohr's work the Octet Theory and Isotopes as well as Ionisation Potentials and Solar Phenomena Because much of the material of Atomic Theories lies on the boundary between experimentally verified fact and speculative theory it indicates in a unique way how the future of physics was perceived at the time of writing It thus throws into stark relief not only the immense advances made since the 1920s but also perhaps highlights the importance of not rigidly adhering to a particular program of future discoveries

Atomic Structure and Periodicity Jack Barrett, 2002 Each text in this series provides a concise account of the basic principles underlying a given subject embodying an independent

learning philosophy and including worked examples This text covers atomic structure and periodicity [The Periodic Table, Atomic Structure and Valence](#) Walter Eric Latchem,1965 **Chemical Periodicity** Robert Thomas Sanderson,2013-04-20

The Atom Jack Challoner,2018 Until now popular science has relegated the atom to a supporting role in defining the different chemical elements of the periodic table This bold new title places its subject center stage shining the spotlight directly onto the structure and properties of this tiniest amount of anything it is possible to identify The book covers a huge range of topics including the development of scientific thinking about the atom the basic structure of the atom how the interactions between atoms account for the familiar properties of everyday materials the power and mystery of the atomic nucleus and what the mysterious quantum realm of subatomic particles and their interactions can tell us about the very nature of reality Sparkling text banishes an outdated world of dull chemistry as it brightly introduces the reader to what everything is made of and how it all works on the most fundamental level **The Basics of Atoms and Molecules** Tom

Jackson,2013-12-15 Discusses the basic concepts of atoms and molecules **Atomic Structure and the Periodic Table of the Elements** Michael H. Edmondson,John Halbrooks,1987 *Atoms, Crystals, Molecules* Ainslie Drummond,1970

Atoms, Crystals, Molecules: Modern views of atomic structure and the periodic table Ainslie H. Drummond,1966

Atomic Structure and the Periodic Table Nevil Vincent Sidgwick,1927 **Atoms and Molecules** Chris Woodford,Martin Clowes,2012-07-15 Greek philosophers first hypothesized that matter was composed of atoms but the theory would not resurface again until the late 17th century The idea that that atoms joined to form structures called molecules first appeared in the 19th century and helped explain why gases liquids and solids behave differently from one another In the 20th century subatomic particles were discovered electrons protons and neutrons and atomic structure was finally understood These breakthroughs led to the development of quantum theory and quantum mechanics This book details the inspiring and heroic discovery delving deeply into intriguing stories reviewing major scientific landmarks and introducing readers to the vivid men and women who helped discover and map the microscopic universe that is the atom Supplemental content includes an activity spread a substantial and highly detailed timeline and a list of key people with mini biographies

The Periodic Table Eric R. Scerri,2019-07-25 The periodic table of elements first encountered by many of us at school provides an arrangement of the chemical elements ordered by their atomic number electron configuration and recurring chemical properties and divided into periodic trends In this Very Short Introduction Eric R Scerri looks at the trends in properties of elements that led to the construction of the table and shows how the deeper meaning of the table s structure gradually became apparent with the development of atomic theory and in particular quantum mechanics which underlies the behaviour of all of the elements and their compounds This new edition publishing in the International Year of the Periodic Table celebrates the completion of the seventh period of the table with the ratification and naming of elements 113 115 117 and 118 as nihonium moscovium tennessine and oganesson Eric R Scerri also incorporates new material on recent advances

in our understanding of the origin of the elements as well as developments concerning group three of the periodic table
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Within the Atom John Mills, 1921

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