

Properties of Acids and Bases

(Adapted from Flinn Scientific Acid - Base Test Kit I - #AP4567)

Introduction

Battery acid, stomach acid, acid rain - just a few acids in our everyday life! What does it mean when something is acidic? How do acids differ from bases? In this lab, the physical and chemical properties of a variety of acids and bases will be examined.

Concepts

- Acids vs. Bases
- Indicators
- pH

Background

Acids and bases make up two groups of substances that can be categorized by their physical and chemical properties. Let's take a look at the distinguishing properties:

1. **Taste:** Acids, such as lemons or oranges, taste sour. Bases, such as soap, taste bitter. *Note:* Taste should never be used to identify a lab chemical or unknown substance. This lab does not include a test using taste.
2. **Feel:** Acid solutions do not feel much different than water; however, they sting if they contact broken skin. Base solutions have a slippery feeling. *Note:* Lab chemicals or unknown substances should never be touched with the bare skin. This lab does not include a test using feel.
3. **Indicators:** An indicator is a chemical compound, either on a test paper or in a solution, that changes color depending on the acidity or basicity of a solution and, thus, is used to test for the presence of acids or bases. There are many different kinds of indicators. Litmus paper and phenolphthalein indicator solution are two of the most common.
 - Blue litmus paper turns red when dipped in an acid solution of pH 1-6.
 - Red litmus paper turns blue when dipped in a basic solution of pH 8-14.
 - In a neutral solution with pH 7, each paper retains its original color.
 - Phenolphthalein indicator solution turns a pink color in a basic solution but remains colorless (sometimes cloudy) in an acidic or neutral solution.
4. **Reaction with carbonates:** While most bases do not react with carbonates, acids react with carbonates to release carbon dioxide gas. For example:
$$\text{BaCO}_3 + 2\text{HCl} \rightarrow \text{BaCl}_2 + \text{CO}_2 + \text{H}_2\text{O}$$
5. **Reaction with metals:** While most bases do not react with metals, acids react with active metals to release hydrogen gas. For example:



Lab Properties Of Acids And Bases Answers

**James M. Postma, Julian L. Robert, J.
Leland Hollenberg**



Lab Properties Of Acids And Bases Answers:

Practical Chemistry Labs Leonard Saland, 1989 Features self contained step by step activities using common materials and covering topics from food chemistry to papermaking and electrochemistry Illustrates the connection between the real world and chemistry concepts such as solutions chemistry acids and bases and more Includes teacher notes quizzes and answers to help monitor student progress **Lab Exs In Prin Med Sci** Pearson Custom Publishing, 1990

Contemporary Chemistry Leonard Saland, 1993 This comprehensive guide gives you lesson plans activities and tests for two sequential semester long chemistry courses It is designed to work with our student book Contemporary Chemistry Each lesson plan features a DO NOW section to engage students as soon as they get to class instructional objectives an aim for that class period a motivational application questions or demonstrations to help students draw valid conclusions homework assignments You also get term calendars weekly tests and complete answer keys **Chemistry in the Laboratory** James

M. Postma, Julian L. Robert, J. Leland Hollenberg, 2004-03-12 This clearly written class tested manual has long given students hands on experience covering all the essential topics in general chemistry Stand alone experiments provide all the background introduction necessary to work with any general chemistry text This revised edition offers new experiments and expanded information on applications to real world situations **Fundamentals of Microbiology** Jeffrey C.

Pommerville, 2014 Every new copy of the print book includes access code to Student Companion Website The Tenth Edition of Jeffrey Pommerville's best selling award winning classic text Fundamentals of Microbiology provides nursing and allied health students with a firm foundation in microbiology Updated to reflect the Curriculum Guidelines for Undergraduate Microbiology as recommended by the American Society of Microbiology the fully revised tenth edition includes all new pedagogical features and the most current research data This edition incorporates updates on infectious disease and the human microbiome a revised discussion of the immune system and an expanded Learning Design Concept feature that challenges students to develop critical thinking skills Accesible enough for introductory students and comprehensive enough for more advanced learners Fundamentals of Microbiology encourages students to synthesize information think deeply and develop a broad toolset for analysis and research Real life examples actual published experiments and engaging figures and tables ensure student success The text's design allows students to self evaluate and build a solid platform of investigative skills Enjoyable lively and challenging Fundamentals of Microbiology is an essential text for students in the health sciences New to the fully revised and updated Tenth Edition New Investigating the Microbial World feature in each chapter encourages students to participate in the scientific investigation process and challenges them to apply the process of science and quantitative reasoning through related actual experiments All new or updated discussions of the human microbiome infectious diseases the immune system and evolution Redesigned and updated figures and tables increase clarity and student understanding Includes new and revised critical thinking exercises included in the end of chapter material Incorporates

updated and new MicroFocus and MicroInquiry boxes and Textbook Cases The Companion Website includes a wealth of study aids and learning tools including new interactive animations Companion Website access is not included with ebook offerings *Improving High School Students' Performance in Chemistry with a Hands-on Approach* Mary L. Fredell,1998

Biology/science Materials Carolina Biological Supply Company,1991 **The Essential Lab Manual** Karen Timberlake,2002-06-24 Drawing from the successful main Laboratory Manual the Essential Laboratory Manual includes twenty one experiments which have been revised and updated Suitable for a one or two term lab course The Science Teachers Bulletin ,1989 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 **Science in Your World: Teacher edition** Jay K. Hackett,1991 *Chemists' Guide to Effective Teaching* Norbert J. Pienta,Melanie M. Cooper,Thomas J. Greenbowe,2005 For courses in Methods of Teaching Chemistry Useful for new professors chemical educators or students learning to teach chemistry Intended for anyone who teaches chemistry or is learning to teach it this book examines applications of learning theories presenting actual techniques and practices that respected professors have used to implement and achieve their goals Each chapter is written by a chemist who has expertise in the area and who has experience in applying those ideas in their classrooms This book is a part of the Prentice Hall Series in Educational Innovation for Chemistry **Handbook of Molecular Gastronomy** Christophe Lavelle,Herve This,Alan L. Kelly,Roisin Burke,2021-06-08 Handbook of Molecular Gastronomy Scientific Foundations and Culinary Applications presents a unique overview of molecular gastronomy the scientific discipline dedicated to the study of phenomena that occur during the preparation and consumption of dishes It deals with the chemistry biology and physics of food preparation along with the physiology of food consumption As such it represents the first attempt at a comprehensive reference in molecular gastronomy along with a practical guide through selected examples to molecular cuisine and the more recent applications named note by note cuisine While several books already exist for a general audience either addressing food science in general in a light way and or dealing with modern cooking techniques and recipes no book exists so far that encompasses the whole molecular gastronomy field providing a strong interdisciplinary background in the physics biology and chemistry of food and food preparation along with good discussions on creativity and the art of cooking Features Gives A Z coverage to the underlying science physics chemistry and biology and technology as well as all the key cooking issues ingredients tools and methods Encompasses the science and practice of molecular gastronomy in the most accessible and up to date reference available Contains a final section with unique recipes by famous chefs The book is organized in three parts The first and main part is about the scientific discipline of molecular and physical gastronomy it is organized as an

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Pesticides in Fruits and Vegetables Susan E. Kegley, Laura Wise, 1998-08-12 Students using this laboratory manual will design their own sampling plan to answer questions about organochlorine pesticides in the food supply Concepts covered include structure solubility relationships of organic compounds extraction techniques gas chromatography and risk assessment Students will use the data they collect along with selected readings to debate the issues of pesticide use

How to Prepare for College Board Achievement Tests Joseph A. Mascetta, 1990

Prentice Hall Physical Science Concepts in Action Program Planner National Chemistry Physics Earth Science, 2003-11 Prentice Hall Physical Science Concepts in Action helps students make the important connection between the science they read and what they experience every day Relevant content lively explorations and a wealth of hands on activities take students understanding of science beyond the page and into the world around them Now includes even more technology tools and activities to support differentiated instruction

Exploring Biology in the Laboratory: Core Concepts Murray P. Pendarvis, John L. Crawley, 2019-02-01 Exploring Biology in the Laboratory Core Concepts is a comprehensive manual appropriate for introductory biology lab courses This edition is designed for courses populated by nonmajors or for majors courses where abbreviated coverage is desired Based on the two semester version of Exploring Biology in the Laboratory 3e this Core Concepts edition features a streamlined set of clearly written activities with abbreviated coverage of the biodiversity of life These exercises emphasize the unity of all living things and the evolutionary forces that have resulted in and continue to act on the diversity that we see around us today

Handbook of Adolescent Literacy Research Leila Christenbury, Randy Bomer, Peter Smagorinsky, 2011-06-10 The first comprehensive research handbook of its kind this volume showcases innovative approaches to understanding adolescent literacy learning in a variety of settings Distinguished contributors examine how well adolescents are served by current instructional practices and highlight ways to translate research findings more effectively into sound teaching and policymaking The book explores social and cultural factors in adolescents approach to communication and response to instruction and sections address literacy both in and out of schools including literacy expectations in the contemporary workplace Detailed attention is given to issues of diversity and individual differences among learners Winner Literacy Research Association s Fry Book Award

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The Software Encyclopedia 2000

Bowker Editorial Staff,2000-05

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