

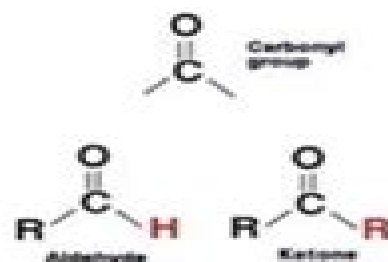
Identification of Unknown Organic Compound

IN THIS EXPERIMENT, YOU WILL

- Determine the classes of alcohol by using the Lucas Test
- Identify the carbonyl compound by using Brady's, Tollen's and Fehling's Test.
- Identify the methyl carbonyl and methyl carbinol compounds by using the Iodoform Test

INTRODUCTION

Alcohols are organic compounds in which, as their functional group, one or more hydrogen atoms in an alkane have been replaced by a group of $-OH$ (hydroxyl). Alcohols fall into various classes depending on how the $-OH$ group is positioned on the carbon atom chain. Alcohol can be oxidized to aldehyde, ketone, and carboxylic acid. The product formed from the oxidation depends on the classes of alcohol used as reactant.



Aldehydes and ketones are carbonyl compounds. They contained a carbonyl group; a double bond of carbon-oxygen, ($C=O$). Oxygen is far more electronegative than carbon, and thus has a strong tendency to pull electrons towards itself in a carbon - oxygen bond. That makes the bond between carbon and oxygen extremely polar. Nucleophiles can attack the partially positive carbon-atom in the carbonyl group. Aldehydes have the $RCHO$ structure, in which R is an alkyl or aryl group. The hydrogen atom attached to the carbonyl group leads to different oxidation behavior in aldehydes compared to that seen with ketones. Ketones meanwhile have the $RR'CO$ structure where R and R' are an alkyl group attached to both ends of carbon in a carbonyl group.

Methods To Identify Unknown Compounds

Adedeji B. Badiru, LeeAnn Racz



Methods To Identify Unknown Compounds:

The Systematic Identification of Organic Compounds Christine K. F. Hermann, Terence C. Morrill, Ralph L. Shriner, Reynold C. Fuson, 2023-03-08 The Systematic Identification of Organic Compounds A comprehensive introduction to the identification of unknown organic compounds Identifying unknown compounds is one of the most important parts of the study of chemistry From basic characteristics such as melting and or boiling point to more complex data generated through cutting edge techniques the range of possible methods for identifying unknown organic compounds is substantial The utility of a research reference which compiles known techniques and characteristics of possible compounds is clear The Systematic Identification of Organic Compounds provides such a reference designed to teach a hands on approach in the chemistry lab It takes readers step by step through the process of identifying an unknown compound and elucidating its structure from infrared nuclear magnetic resonance and mass spectra in addition to solubility characteristics melting point boiling point and classification tests The result is an essential overview for advanced chemistry students looking to understand this exciting area of laboratory work Readers of the ninth edition of The Systematic Identification of Organic Compounds will also find A detailed chapter on safety personal protection equipment chemical storage safety data sheets and other safety concerns New NMR IR and mass spectra with detailed explanations on interpretation Questions at the end of each chapter designed to facilitate and reinforce progression keyed to a companion website for instructors Tables of known compounds including data relevant for identification Companion website with structural problems from experimental data for students to practice how to reason and solve The Systematic Identification of Organic Compounds is a useful reference for advanced undergraduates and graduate students studying organic chemistry organic spectroscopy and related subjects

A Method for the Identification of Pure Organic Compounds by a Systematic Analytical Procedure Based on Physical Properties and Chemical Reactions ... Samuel Parsons Mulliken, 1916

A Method for the identification of pure organic compounds by a systematic analytical procedure based on physical properties and chemical reactions ... v. 1, 1911 Samuel Parsons Mulliken, 1904

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[GC/LC, Instruments, Derivatives in Identifying Pollutants and Unknowns](#) Raymond C. Crippen, 2013-10-22 GC LC Instruments Derivatives in Identifying Pollutants and Unknowns outlines the methods of identifying various components in products processes or discharges to the environment This book is composed of 14 chapters that demonstrate the utility of gas and liquid chromatographs in the analysis of unknown organic compounds The opening chapters deal with the isolation and the preparation of derivatives of various pollutants Considerable chapters are devoted to the analysis and detection of various organic group compounds including derivatives of acetals acetates acids acid halides ethers amines amino acids anilides barbiturates benzamides esters and hydrocarbons Other chapters cover other group compounds such as derivatives of

oxalates oximes peroxides phenyl semicarbazones silicones sulfur toluidides tri halo acids and alcohols The closing chapters describe the identification techniques and instrumentation of pollutant detection These chapters highlight the utilization of GC LC data in physic chemical measurements of various organic pollutants This book will prove useful to analytical and organic chemists environmental scientists and researchers

A Beginner's Guide to Mass Spectral Interpretation Terrence A. Lee,1998-02-04 This book is a logical step by step guide to identification of organic compounds by mass spectrometry The book is organized into chapters covering the major types of organic compounds including alcohols acids and esters aldehydes and ketones ethers hydrocarbons halogenated compounds amines and amides and sulfur containing compounds In each chapter the mechanisms of the major fragmentation pathways are discussed with reference to several simple sample compounds By teaching the user to recognize typical fragmentations the book removes the need to search databases often limited of electronic spectra Key features of the book include 200 representative spectra of common organic compounds Functional group approach to mass spectra interpretation Appendix of unknown spectra with step by step guide to identification This book is a must for anyone who needs to identify organic molecules by mass spectrometry but does not need to know the detailed workings of a mass spectrometer

Chemical Identification and its Quality Assurance Boris L. Milman,2013-06-17 This is the first book to show how to apply the principles of quality assurance to the identification of analytes qualitative chemical analysis After presenting the principles of identification and metrological basics the author focuses on the reliability and the errors of chemical identification This is then applied to practical examples such as EPA methods EU FDA or WADA regulations Two whole chapters are devoted to the analysis of unknowns and identification of samples such as foodstuffs or oil pollutions Essential reading for researchers and professionals dealing with the identification of chemical compounds and the reliability of chemical analysis

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Structural Identification of Organic Compounds with Spectroscopic Techniques Yong-Cheng Ning,2005-05-06 Clearly structured easy to read and optimal to understand this extensive compendium fills the gap between textbooks devoted to either spectra interpretation or basic physical principles The original Chinese editions have already sold over 18 500 copies and the material is taken from the latest literature from around the world plus technical information provided by the manufacturers of spectroscopic instruments Alongside basic methods Professor Ning presents up to date developments in NMR MS IR and Raman spectroscopy such as pulsed field gradient technique LC NMR and DOSY He

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Handbook of Measurements Adedeji B. Badiru, LeeAnn Racz, 2018-10-08 Planning measuring and paying attention to details form the basis for all successful engineering operations Measurements pervade everything we do and must be viewed from a systems perspective A comprehensive all encompassing guide to measurements Handbook of Measurements Benchmarks for Systems Accuracy and Precision focuses on high level engineering computations essential for benchmarks and technical innovation The book uses a systems framework and a technically rigorous approach to systems linking of measurements an approach that sets it apart from other handbooks The popular saying measure twice and cut once bears out the importance of measurements in human endeavors This handbook covers both qualitative and quantitative topics of measurement It opens with a chapter on the fundamentals of measurement and includes coverage of human centric measurements such as measurement of personnel productivity and contractor performance It concludes with three appendices on measurement references conversion factors equations formulas and statistics for measurement It is well understood that humans cannot manage anything that cannot be measured All elements involved in our day to day decision making involve some form of measurement whether in the kitchen retail sports service operations geographical exploration health care delivery worker productivity clothing design engineering product design or space craft launching Measuring an attribute of a system and then analyzing it against some standard some specification some best practice or some benchmark empower a decision maker to take appropriate and timely actions This book gives you a guide for sustainable practices to ensure accurate measurements helping you make decisions backed by metrics

Spectrometric Identification of Organic Compounds Robert M. Silverstein, Francis X. Webster, David J. Kiemle, David L. Bryce, 2014-11-03 First published over 40 years ago this was the first text on the identification of organic compounds using spectroscopy This text is now considered to be a classic The key strength of this

text is the extensive set of real data problems Even professional chemists use these spectra as reference data Spectrometric Identification of Organic Compounds is written by and for organic chemists and emphasizes the synergistic effect resulting from the interplay of the spectra This book is characterized by its problem solving approach with extensive reference charts and tables The Systematic Identification of Organic Compounds, Set Christine K. F. Hermann, Terence C. Morrill, Ralph L. Shriner, Reynold C. Fuson, 2023-05-02 **Journal of the Society of Chemical Industry** ,1923 Experimental Organic Chemistry James Flack Norris, 1915 Technology Review ,1905 *Laboratory Practice in Chemistry* William McPherson, William Edwards Henderson, 1922 *Mass Spectrometry* R A W Johnstone, 2007-10-31 Specialist Periodical Reports provide systematic and detailed review coverage of progress in the major areas of chemical research Written by experts in their specialist fields the series creates a unique service for the active research chemist supplying regular critical in depth accounts of progress in particular areas of chemistry For over 80 years the Royal Society of Chemistry and its predecessor the Chemical Society have been publishing reports charting developments in chemistry which originally took the form of Annual Reports However by 1967 the whole spectrum of chemistry could no longer be contained within one volume and the series Specialist Periodical Reports was born The Annual Reports themselves still existed but were divided into two and subsequently three volumes covering Inorganic Organic and Physical Chemistry For more general coverage of the highlights in chemistry they remain a must Since that time the SPR series has altered according to the fluctuating degree of activity in various fields of chemistry Some titles have remained unchanged while others have altered their emphasis along with their titles some have been combined under a new name whereas others have had to be discontinued The current list of Specialist Periodical Reports can be seen on the inside flap of this volume **Bulletin** USA Division of Chemistry, 1892

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