

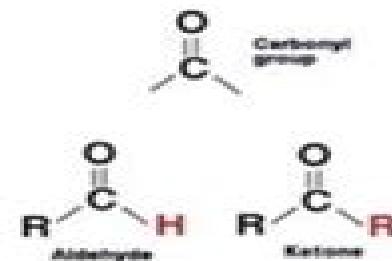
# Identification of Unknown Organic Compound

## 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Alcohols are organic compounds in which, as their functional group, one or more hydrogen atoms in an alkane have been replaced by a group of  $-OH$  (hydroxyl).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 contain 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

**Robert H. Shapiro**

## **Methods To Identify Unknown Compounds:**

*N-nitroso Compounds in the Factory Environment* David P. Rounbehler,1983     *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

**Field Screening Methods for Hazardous Waste Site Investigations** ,1989     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

*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     *A Method for the identification of pure organic compounds by a systematic analytical procedure based on physical properties and chemical reactions ... v. 2, 1916* Samuel Parsons

**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 physicochemical measurements of various organic pollutants This book will prove useful to analytical and organic chemists environmental scientists and researchers

**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 stresses the application of spectroscopic methods interpreting them in great detail and depth since most of the selected spectra may be applied to practical work as well as summarizing the rules for their interpretation He also incorporates his original ideas including a comparison of the common points in different spectroscopic techniques This monograph features a unique structure a typical example being the discussion of 2D NMR starting from pulse sequence units which construct various pulse sequences for related 2D NMR A complete chapter deals with the determination of configurations and conformations of organic compounds and even biological molecules from the viewpoint of spectroscopic methodologies while one whole section is dedicated to the interpretation of mass spectra produced by soft ionization techniques The principles of mass analyzers especially the ion trap are discussed in great depth together with a concise summary of the MS fragmentation and rearrangement of common compounds allowing readers to easily predict related mass spectrometric reactions All the three kinds of library retrieval of mass spectra are presented in detail together with recent developments in molecular vibration spectroscopy The whole is rounded off with several appendices including a subject index for rapid reference With a foreword by the Nobel prizewinner Richard R Ernst

**Spectral Exercises in Structural Determination of Organic Compounds** Robert H. Shapiro, 1969 For undergraduate students **The Systematic Identification of Organic Compounds** Ralph Lloyd Shriner, 1980 Step by step instructions on identifying organic compounds The steps described include elemental analysis solubility infrared spectra nuclear magnetic resonance spectra mass spectra classification tests and preparation of a derivative Most directions for experiments are described in a micro or mini scale and clean up directions are given at the end of each procedure Emphasizes the systematic approach to identifying unknowns Offers a review of spectroscopy Discusses infrared nuclear magnetic resonance and mass spectroscopy and includes examples of spectra Discusses chromatography distillations and the separation of mixtures

**Laboratory experiments on the class reactions and identification of organic substances** Arthur Amos Noyes, 1897 **Biotechnology and Biology of Trichoderma** Vijai G. Gupta, Monika Schmoll, Alfredo Herrera-Estrella, Dr. R. S. Upadhyay, Irina Druzhinina, Maria Tuohy, 2014-02-17 Biotechnology and Biology of Trichoderma

serves as a comprehensive reference on the chemistry and biochemistry of one of the most important microbial agents Trichoderma and its use in an increased number of industrial bioprocesses for the synthesis of many biochemicals such as pharmaceuticals and biofuels This book provides individuals working in the field of Trichoderma especially biochemical engineers biochemists and biotechnologists important information on how these valuable fungi can contribute to the production of a wide range of products of commercial and ecological interest Provides a detailed and comprehensive coverage of the chemistry biochemistry and biotechnology of Trichoderma fungi present in soil and plants Includes most important current and potential applications of Trichoderma in bioengineering bioprocess technology including bioenergy biofuels biopharmaceuticals secondary metabolites and protein engineering Includes the most recent research advancements made on Trichoderma applications in plant biotechnology and ecology and environment

#### *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

#### *Reproducibility of Mass Spectral Peak Intensities as the Basis of an Automated Library Search Method for Identification of Organic Compounds* Peter Cleij, 1983

#### **Mechanisms of Polymer Degradation and Stabilisation**

G. Scott, 1990-11-30 The purpose of this publication is two fold In the first place it is intended to review progress in the development of practical stabilising systems for a wide range of polymers and applications A complementary and ultimately more important objective is to accommodate these practical developments within the framework of antioxidant theory since there can be little question that further major advances in the practice of stabilisation technology

will only be possible on a firm mechanistic foundation. With the continual increase in the number of commercial anti oxidants and stabilisers often functioning by mechanisms not even considered ten years ago there is a need for a general theory which will allow the potential user to predict the performance of a particular antioxidant structure under specific practical conditions. Any such predictive tool must involve a simplified kinetic approach to inhibited oxidation and in Chapter 1 Denisov outlines a possible mechanistic approach with the potential to predict the most useful antioxidant to use and the limits of its usefulness. In Chapter 2 Schwetlick reviews the current state of knowledge on the antioxidant mechanisms of the phosphite esters with particular emphasis on their catalytic peroxidolytic activity. Dithiophosphate v vi PREFACE derivatives show a similar behaviour but for quite different reasons and in Chapter 3 Al Malaika reviews information available from analytical studies particularly using  $^{31}\text{P}$  NMR spectroscopy to elucidate the complex chemistry that leads to the formation of the antioxidant active agents. *An Introduction to Qualitative Chemical Analysis by the Inductive Method* Delos Fall, 1892.

Laboratory Training Manual on the Use of Nuclear Techniques in Pesticide Research Food and Agriculture Organization of the United Nations, International Atomic Energy Agency, 1983. *Introduction to Organic Laboratory Techniques* Donald L. Pavia, 2007. Resumen: Taking an organic chemistry laboratory course You need a manual you can trust. This proven laboratory manual gives you what you need to conduct a variety of interesting microscale experiments with safety and ease while you develop an understanding of the special techniques these type of experiments require. The authors have increased the book's green approach giving you the clearly written information and instruction to conduct chemical experiments in a more environmentally friendly way. Many of the book's experiments have been modified to use new techniques and reduce the use of hazardous solvents and reagents. You'll find fascinating essays that add real life relevance and understanding to each experiment including Identification of Drugs, Petroleum and Fossil Fuels, Detection of Alcohol, The Breathalyzer and Fireflies and Photochemistry. **The Development and Evaluation of a Remote Sensing Fourier Transform Infrared System** Hongkui Xiao, 1992.

The Enigmatic Realm of **Methods To Identify Unknown Compounds**: Unleashing the Language is Inner Magic

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