# Organic Spectroscopy: NMR, IR, Mass, and UV



Organic Spectroscopy: NMR, IR, Mass, and UV is the definitive guide to the principles and applications of spectroscopy in organic chemistry. This book will help you interpret and understand organic spectra, and it will provide you with the tools you need to solve structural problems.

#### What is spectroscopy?

Spectroscopy is the study of the interaction of electromagnetic radiation with matter. When electromagnetic radiation interacts with matter, it can be absorbed, emitted, or scattered. The pattern of absorption, emission, or scattering can be used to identify and characterize the matter.

#### Organic spectroscopy

Organic spectroscopy is the study of the interaction of electromagnetic radiation with organic molecules. Organic molecules are molecules that contain carbon. Organic spectroscopy is used to identify and characterize organic molecules, and to determine their structure.

## The four main types of spectroscopy

There are four main types of spectroscopy that are used in organic chemistry:

- Nuclear magnetic resonance (NMR) spectroscopy
- Infrared (IR) spectroscopy
- Mass spectrometry (MS)
- Ultraviolet-visible (UV-Vis) spectroscopy

## NMR spectroscopy

NMR spectroscopy is a powerful tool for determining the structure of organic molecules. NMR spectroscopy uses the magnetic properties of atomic nuclei to determine the structure of molecules. NMR spectroscopy can be used to identify the different atoms in a molecule, and to determine how they are bonded together.

## **IR spectroscopy**

IR spectroscopy is a versatile technique that can be used to identify and characterize organic molecules. IR spectroscopy uses the absorption of infrared radiation by molecules to determine their structure. IR spectroscopy can be used to identify the different functional groups in a molecule, and to determine how they are bonded together.

## Mass spectrometry

Mass spectrometry is a powerful tool for determining the molecular weight of organic molecules. Mass spectrometry uses the mass-to-charge ratio of ions to determine the molecular weight of molecules. Mass spectrometry can be used to identify the different isotopes of an element, and to determine the elemental composition of molecules.

#### **UV-Vis spectroscopy**

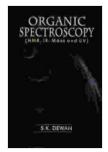
UV-Vis spectroscopy is a versatile technique that can be used to identify and characterize organic molecules. UV-Vis spectroscopy uses the absorption of ultraviolet and visible radiation by molecules to determine their structure. UV-Vis spectroscopy can be used to identify the different chromophores in a molecule, and to determine how they are conjugated.

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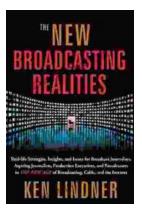
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