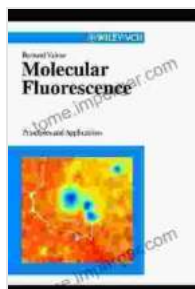


Molecular Fluorescence: Principles and Applications

Molecular fluorescence is a powerful tool for studying the structure and dynamics of molecules. It is used in a wide range of applications, including biology, chemistry, and medicine. This book provides a comprehensive overview of the principles and applications of molecular fluorescence spectroscopy.

The basic principles of fluorescence spectroscopy are relatively simple. When a molecule absorbs a photon of light, it is excited to a higher energy state. This excited state is unstable, and the molecule quickly returns to its ground state by emitting a photon of light. The wavelength of the emitted light is longer than the wavelength of the absorbed light, and the difference in wavelength is known as the Stokes shift.

The Stokes shift is caused by the fact that the molecule undergoes a structural change when it is excited. This structural change can be used to learn about the structure of the molecule. For example, the Stokes shift of a protein can be used to determine the protein's secondary structure.



Molecular Fluorescence: Principles and Applications

by Bernard Valeur

★★★★☆ 4.7 out of 5

Language : English

File size : 18046 KB

Text-to-Speech : Enabled

Enhanced typesetting : Enabled

Print length : 903 pages



There are a variety of instruments that can be used to measure fluorescence spectroscopy. The most common type of instrument is the fluorometer. A fluorometer consists of a light source, a sample chamber, and a detector. The light source emits a beam of light that is directed through the sample chamber. The sample absorbs the light and emits fluorescence, which is detected by the detector.

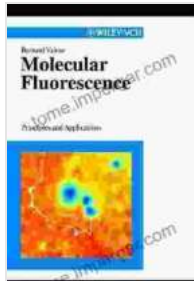
The sensitivity of a fluorometer is determined by the intensity of the light source, the efficiency of the sample chamber, and the sensitivity of the detector. The most sensitive fluorometers can detect single molecules.

Fluorescence spectroscopy has a wide range of applications in biology, chemistry, and medicine. Some of the most common applications include:

- **Biology:** Fluorescence spectroscopy is used to study the structure and dynamics of proteins, nucleic acids, and other biological molecules. It is also used to study the interactions between molecules and to track the movement of molecules in cells.
- **Chemistry:** Fluorescence spectroscopy is used to study the structure and dynamics of molecules. It is also used to study the reactions between molecules and to develop new materials.
- **Medicine:** Fluorescence spectroscopy is used to diagnose diseases, to monitor the effectiveness of drugs, and to develop new treatments.

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