OPEN ACCESS Freely available online

Mass Spectrometry & Purification Techniques

Commentary

An Overview on Spectroscopy and Its Purification Process

William Jon*

Department of Analytical Chemistry, University of Science, Penang, Malaysia

DESCRIPTION

Spectroscopy is a technique that is used to study the interaction of matter with electromagnetic radiation. This technique has a wide range of applications in various fields, including chemistry, physics, biology, and medicine. One of the most important applications of spectroscopy is in the purification processes of various materials.

In the context of purification processes, spectroscopy is used to study the structure and composition of materials, as well as the interaction of impurities with the material being purified. Spectroscopy techniques can provide valuable information about the purity of a material, as well as the efficiency of the purification process. One of the most commonly used spectroscopy techniques in purification processes is UV-Visible spectroscopy. This technique is used to study the interaction of UV and visible light with a sample. UV-Visible spectroscopy can provide information about the concentration of a material in solution, as well as the purity of the sample.

UV-Visible spectroscopy is based on the principle of Beer-Lambert law, which states that the absorbance of a sample is directly proportional to its concentration. This law is used to determine the concentration of a material in solution by measuring the absorbance of the sample at a specific wavelength. Another important spectroscopy technique in purification processes is infrared (IR) spectroscopy. IR spectroscopy is used to study the interaction of infrared radiation with a sample. This technique can provide information about the functional groups present in a molecule, as well as the purity of the sample.

IR spectroscopy is based on the principle that different chemical bonds absorb infrared radiation at different frequencies. This allows for the identification of functional groups in a molecule, as well as the determination of the purity of the sample. In addition to UV-Visible and IR spectroscopy, other spectroscopy techniques are also used in purification processes, including Raman spectroscopy, X-ray Diffraction (XRD), and X-ray Photoelectron Spectroscopy (XPS). Each of these techniques provides valuable information about the composition and purity of materials.

Raman spectroscopy is used to study the vibrational modes of a sample. This technique can provide information about the crystal structure of a material, as well as the presence of impurities. XRD is used to study the crystal structure of a material. This technique can provide information about the purity of the sample, as well as the presence of impurities. XPS is used to study the chemical composition of a sample. This technique can provide information about the purity of the sample, as well as the presence of impurities.

Spectroscopy techniques are often used in combination with other purification techniques to ensure the purity of a material. For example, chromatography is a widely used technique in purification processes. Chromatography separates components in a mixture based on their physical and chemical properties. Spectroscopy techniques can be used to analyze the composition of the material before and after the chromatography process. This allows for the determination of the efficiency of the purification process, as well as the purity of the material.

Another commonly used purification technique is distillation. Distillation separates components in a mixture based on their boiling points. Spectroscopy techniques can be used to analyze the composition of the material before and after the distillation process. This allows for the determination of the efficiency of the purification process, as well as the purity of the material.

CONCLUSION

Overall, spectroscopy techniques play an important role in the purification processes of various materials. These techniques provide valuable information about the composition and purity of materials, as well as the efficiency of the purification process. By combining spectroscopy techniques with other purification techniques, researchers can ensure that materials are purified to the highest possible level of purity

Correspondence to: William Jon, Department of Analytical Chemistry, University of Science, Penang, Malaysia, E-mail: jowilliam@jo.com

Received: 27-Feb-2023, Manuscript No. MSO-23-23751; **Editor assigned:** 03-Mar-2023, Pre QC No. MSO-23-23751(PQ); Reviewed: 17-Mar-2023, QC No. MSO-23-23751; **Revised:** 24-Mar-2023, Manuscript No. MSO-23-23751(R); **Published:** 31-Mar-2023, DOI: 10.35248/2469-9861.22.9.185

Citation: Jon W (2023) An Overview on Spectroscopy and Its Purification Process. J Mass Spectrom Purif Tech. 9:185.