Visit to Research Lab for Educational Purposes: Uka Tarsadia University

Date: 01/02/2023

Location: Uka Tarsadia University, Maliba-Campus, Bardoli.

Coordinator: Dr. Mayur I. Morja

Objective of visit: To gain practical knowledge and understanding of various analytical techniques used in research labs, specifically UV spectroscopy, IR spectroscopy, and HPLC.

The students of Government Science College, Vankal has visited the Research Lab at Uka Tarsadia University, Maliba-Campus to gain hands-on experience with various analytical techniques used in research labs. The visit was an excellent opportunity for students to learn about the principles, applications, and limitations of these techniques. Elaborative details of each instruments is given below:

UV Spectroscopy: We began our visit with a presentation on UV spectroscopy, which is used to measure the absorbance of light by molecules. Our guide explained the principles of UV spectroscopy, including the Beer-Lambert law and the importance of wavelength selection. We then observed a demonstration of UV spectroscopy in action, where we analyzed a sample using a UV-Vis spectrophotometer. The instrument's user interface and data analysis software were also discussed.

Key takeaways:

- Understanding of the principles of UV spectroscopy and its applications in chemistry and biology
- Familiarity with the operation of a UV-Vis spectrophotometer
- Appreciation for the importance of wavelength selection and Beer-Lambert law

IR Spectroscopy: Next, we learned about IR spectroscopy, which is used to identify the molecular structure of a compound based on its infrared absorption pattern. Our guide explained the principles of IR spectroscopy, including the vibration modes of molecules and how they absorb infrared radiation. We then observed a demonstration of IR spectroscopy,

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where we analyzed a sample using an FTIR spectrometer. The instrument's user interface and data analysis software were also discussed.

Key takeaways:

- Understanding of the principles of IR spectroscopy and its applications in chemistry and biology
- Familiarity with the operation of an FTIR spectrometer
- Appreciation for the importance of molecular structure in determining IR absorption patterns

HPLC: Finally, we learned about HPLC (High-Performance Liquid Chromatography), which is used to separate, identify, and quantify components in a mixture. Our guide explained the principles of HPLC, including column selection, mobile phase composition, and detection methods. We then observed a demonstration of HPLC, where we analyzed a sample using an HPLC instrument. The instrument's user interface and data analysis software were also discussed.

Key takeaways:

- Understanding of the principles of HPLC and its applications in chemistry and biology
- Familiarity with the operation of an HPLC instrument
- Appreciation for the importance of column selection, mobile phase composition, and detection methods.

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Photos of the Visit

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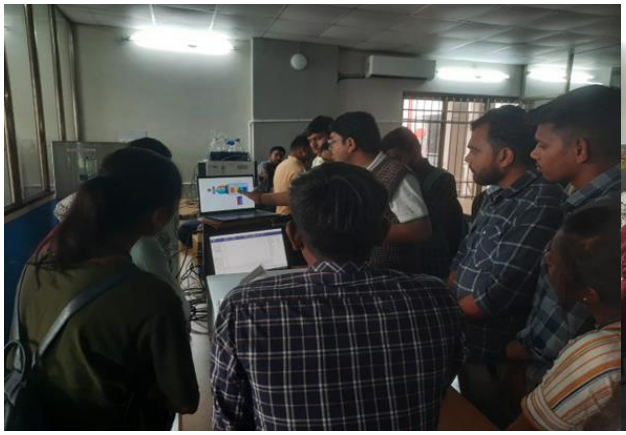

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