

Industrial Visit- 'SHIMADZU ANALYTICAL (India) PRIVATE LIMITED'

The students of NMIMS – School of Science, Mumbai visited 'SHIMADZU ANALYTICAL (India) PRIVATE LIMITED', Andheri (East), Mumbai on 17th January, 2014, as a part of educational visit organized by Industrial Interface cell along with faculties Dr. Purvi Bhatt and Dr. Brijesh S.

Shimadzu Analytical India Pvt. Ltd (SAIP) is an owned subsidiary of Shimadzu Asia Pacific Pvt Ltd, Singapore, incorporated in year 2006. Their primary goal is to support analytical needs of customers in India and to achieve 100% customer satisfaction in-terms of timely support and pro-active actions.

During the industrial visit, a brief introduction and overview of SAIP was given to the students highlighting the advantages of nuclear energy and its potential applications in biomedical research, food security, material sciences, nanotechnology, waste management, energy security, crime detection, use of radioisotopes, brachytherapy, teletherapy. The students were then taken for the facility tour during which the following three sections were covered: GC/GCMS, LC/LCMS/Prep LC and Spectro (UV/IR/AAS) /Thermal (DSC/DTG)

Spectro (UV/IR/AAS) & Thermal (DSC/DTG):

Spectrophotometers: were originally developed for the absorption measurement of liquid samples. In recent years, however, high-precision, high-energy spectrophotometers have hit the market due to the rapid increase in reflection and absorption measurements on solid samples, including semiconductors, films, glass, and absorbing materials. In the meantime, the field of life sciences demands high-throughput analyzers offering high-sensitivity and high-speed measurement of ultra-trace samples. Shimadzu develops hardware and software to meet all these requirements. The following instruments were demonstrated: SolidSpec-3700/3700DUV, UV-3600, UV-2600, UV-2700, and UV-1800

FTIR Spectroscopy: Shimadzu has released a variety of FTIR systems to identify fragments from a sample boasting high resolution and high sensitivity and a variety of associated instruments, such as an infrared microscope unit, to facilitate automation. The following instruments were demonstrated: IRTracer-100 and IRAffinity-1S

Inductively Coupled Plasma Emission Spectroscopy: This analysis method uses a high-frequency inductively-coupled plasma as the light source, and is ideal for the analysis of

sample solutions. The ICP Emission Spectrometer has become highly regarded for its speed and accuracy, due to the increase in the number of analyzed samples and analyzed elements in recent years. It is widely used as the official analysis method according to JIS and ISO standards and the Japanese Water Supply Act. This instrument supports an extensive range of analysis from trace levels to high concentrations. It also supports analysis for research and development, automated analysis for production control, and water-quality monitoring analysis for environmental management.

Energy Dispersive X-ray Fluorescence Spectroscopy: The energy dispersive X-ray fluorescence spectrometer irradiates the sample with X-rays and measures the energy (wavelength) and intensity of the generated fluorescent X-rays to determine the type and content of the elements comprising the sample. As X-ray fluorescence spectrometry permits the non-destructive elemental analysis of solid, powder, and liquid samples as well as rapid, non-destructive testing for harmful elements in printed circuit boards and other electronic devices. It is widely used by electronics and automobile manufacturers around the world for receiving and shipping inspections and other quality control in compliance with the RoHS/ELV Directive.

(EDX-7000/8000 and EDX-LE)

LCMS/LCMS-MS/Prep LC/ GC/GCMS/GCMS-MS/GC-HS/MDGC

The Liquid Chromatography and Mass Spectrometry (LC-MS) Department:

In the LC-MS department, the students were shown both the old and new versions of the HPLC and MS systems manufactured by Shimadzu. In addition, the basic principle of the working of LC and MS was also explained. The following instruments were covered:

1. LC : Liquid Chromatography
2. LCMS : Liquid chromatography–mass spectrometry
3. LC-MS/MS : Triple Quadrupole Liquid Chromatography Mass Spectrometer
4. Prep LC : Preparative Liquid Chromatography

The gas chromatography Department: Following Instrumental techniques were discussed:

- Gas chromatography (GC)
- Gas chromatography coupled with Mass spectrometry(GC-MS)

The overall visit was absolutely an incredible experience. The visit proved to be very informative and educative for the students.

