

Report on Field Visit to CSIR–Indian Institute of Chemical Technology (CSIR-IICT), Hyderabad

A field visit was organized to CSIR–Indian Institute of Chemical Technology (CSIR-IICT), Hyderabad, to attend the SAMYUKTH – Season 8 Poster Day on Friday, 12th December 2025.

The visit was attended by Faculty members Mrs. P. Sandhya Rani and Mrs. Nanda Kulkarni, along with students of B.Sc. Biotechnology (BtZC) I Year and II Year and BZC II Year. The program was held at the Swami Vivekananda Auditorium, CSIR-IICT, commencing at 10:30 AM.

The event began with an opening ceremony, followed by the genesis and importance of Poster Day, highlighting the role of interdisciplinary research and innovation. Eminent scientists addressed the gathering, including the Director of CSIR-IICT, Dr. D. Srinivasa Reddy, and the Chief Guest, Dr. Geetha Vani Rayasam, Director, CSIR-NIScPR. The sessions provided valuable insights into research opportunities at AcSIR and CSIR laboratories, motivating students towards higher education and research careers.

An Abstract Book Release and video presentation on CSIR-IICT's research activities further enhanced students' understanding of ongoing scientific advancements. The programme concluded with the National Anthem.

In the afternoon session, the Poster Gallery was inaugurated, followed by an extensive poster presentation session. Students actively interacted with research scholars and scientists, gaining exposure to cutting-edge research in chemical sciences, Biotechnology, Nanotechnology and interdisciplinary fields. A laboratory tour was also arranged, offering firsthand experience of advanced instrumentation and research facilities at CSIR-IICT.

Overall, the field visit was highly informative and inspiring, providing students with practical exposure to research culture, scientific communication through posters, and career opportunities in national research institutions. The visit successfully bridged classroom learning with real-world scientific research.



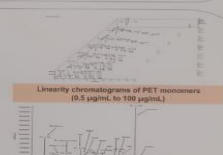


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Background

- Plastics persist for decades to centuries and fragment into microplastics and nanoplastics
- Microplastics (MPs), defined as plastic particles with a diameter $\geq 5\text{ mm}$
- Global plastic use exceeds 300 million tonnes/year, with widespread MP contamination in air, water, soil and food. Humans ingest and inhale tens of thousands of MPs annually, increasing potential health risks
- MPs contain monomers and additives (phthalates, BPA, etc.) that can leach and cause adverse health and environmental impacts
- PET widely used in packaging contributes to environmental MPs and can release monomers/additives regulated by food-safety standards
- Specific Migration limit (SML) for PET monomers
- Temphatic Acid: 7.5 mg/kg
- Overall migration limit: 60 mg/kg

- Chemical stability of monomers of plastics in the presence of different stress conditions using Mass Spectrometry.
- Explore MALDI and Pyrolysis GC-MS for monomer identification in packaging materials
- In vitro studies and adverse effects of micro plastics and its monomers.

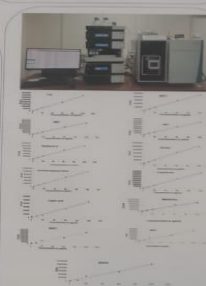


The diagram illustrates the representation of listed plastic monomers. It shows the chemical structures of ethylene, propylene, and styrene, and a central diagram showing the polymerization of these monomers into a plastic material.



Typical Chromatograms of 13 monomers

S.No	Compound Name	(R _f approx. % Vol weight), Correlation coefficients
1	Terephthalic acid (TPA)	0.868
2	Bis(2-hydroxyethyl) terephthalate (BHET)	0.939
3	Monoethyl terephthalate (MET)	0.955
4	Bisphenol A	0.969
5	Dimethyl terephthalate (DMT)	0.995
6	Styrene	0.388
7	4,4-Dichlorodiphenyl Sulfone	0.248
8	Methylene	0.065
9	Adipic Acid	0.065
10	n-octadecane	1.008
11	BHET	0.992



Degradation pathways of PET

- Developed a robust UPLC chromatography method for the separation of 13 monomers.
- Optimized for 13 monomers in single LC-HRMS method to quantify in the packaging materials.
- Water sample analysis from different water bodies across India.

- Identification and quantification of genotoxic impurities, including N-Nitrosamine impurities in pharmaceutical products.
- Impurity profiling, degradation studies and stability studies of drug substance and drug product using chromatography and Mass spectrometry techniques.
- Isolation and characterisation of pharmaceuticals and phytochemical compounds using chromatography, mass spectrometry and other spectroscopic techniques.
- Untargeted and targeted multi-omics in biological samples by GC-MS/MS and LC-HRMS/MS.

- Commission Regulation (EU) No 10/2011 of 14 January 2011 on plastic materials and articles intended to come into contact with food text with EEAs relevance.
- Guideline for extractable and leachables
- Q3E draft version endorsed on 01 August 2025.
- Meng Zhang et al, Recent Applications in Analytical Techniques of Micro plastics.
<https://doi.org/10.1080/10408347.2025.2518328>

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CSIR-INDIAN INSTITUTE OF CHEMICAL TECHNOLOGY

SAMYUKTH-SEASON-8 - Poster Day on December 12, 2025

Timings: 10.30 AM (Friday)

Venue: Swami Vivekananda Auditorium, CSIR-IICT.

PROGRAMME

S.No.	Time	Activity	Personnel
01	10.30-10.35	Opening Ceremony	
02	10.35-10.50	Bouquet to Director and Chief Guest	NILA
03	10.50-11.00	Genesis and Importance of Poster Day	Dr. Pradosh P. Chakrabarti, <i>AcSIR Coordinator & Chief Scientist</i>
04	11.00-11.10	About AcSIR/AAU& Research Opportunities	Dr. L. Giribabu, <i>Chief Scientist & AAU, chairman</i>
05	11.10-11.20	Address by DIICT	Dr. D. Srinivasa Reddy, <i>Director, CSIR-IICT</i>
06	11.15-11.25	About Jigyasa	Dr. K. N. Prasanna Rani <i>Chief Scientist, CSIR-IICT</i>
07	11.25-11.35	Address by Chief Guest	Dr. Geetha Vani Rayasam, <i>Chief Guest</i> <i>Director, CSIR-NIScPR</i>
08	11.35-11.45	Abstract Book Release	Dr. Srinivasa Reddy, Dr. Pradosh P. Chakrabarti, Dr. L. Giribabu, Dr. A. Manjula and Dr. T. Kumaraguru
09	11.45-12.00 Noon	Video Clippings of CSIR-IICT	
10	12.00-12.05	Concluding Remarks	Dr. T. Kumaraguru, <i>Senior Scientist, CSIR-IICT.</i>
11	12.05-12.10	NATIONAL ANTHEM	
12	14.00-14.10	Inauguration of the Posters gallery	Dr. D. Srinivasa Reddy <i>Director, CSIR-IICT</i>
13	14.10-17.00	Poster Session (Opposite Discovery Lab).	Presentation of Poster by students & Faculty of CSIR-IICT Lab Tour: by the visiting students.