Technical Workshops Series – 2018

Two Days Intensive Workshop on
Advanced Thermal Analysis – DSC, TGA & DMA
(Emphasis on Polymeric Materials)
Wave 1

- Organized by NCL & Venture Center -

Learn	Principles of thermal analysis; Types of thermal analysis – DSC, TGA & DMA; Applications of thermal analysis (transition temperatures, melting temperatures, crystallization temperatures, degradation temperatures, composition of mixtures/ blends/ composites); Live demonstration of experiments on latest instruments; Best practices in thermal analysis; Mini-workshop on data interpretation with hands-on experience; Quick update on latest techniques/developments as well as hyphenated techniques like TGA-FTIR etc.; Workshop will emphasize polymeric materials.
Organized by	• Venture Center – a Technology Business Incubator • CSIR- National Chemical Laboratory
For whom	• Industry professionals wishing to expand their skill sets. • Students and staff of polymer/ materials sciences/ engineering/ analytical/physical chemistry wishing to equip themselves for industry jobs
When	**Friday - Saturday , 3 – 4 August 2018 | Time: 0900-1700**
Where	**Classroom Sessions:**Training Room, Venture Center, 100 NCL Innovation Park, Dr. Homi Bhabha Road (Pashan), Pune-411008. **Lab Sessions:**Lab Block, Venture Center & Polymers and Advanced Materials Lab, NCL, Dr. Homi Bhabha Road (Pashan), Pune -411008
Contact	***Technical queries:*** Ms Edna | +91 7410045651| edna@venturecenter.co.in ***Logistical queries***: Ms Lipika | 020-25865877/75/76 |eventsdesk@venturecenter.co.in
Cost	**Category** / **Fees** Students with valid ID card – Rs 3000/- Micro and Small Enterprises/ academic institutions/ Individuals – Rs 5000/- Medium and large companies – Rs 10000/- **Limited seats: 20; First-come-first-serve** **Register here: https://bit.ly/2KCB0uG** Registration closes once 20 seats are full or 31 July 2018 (whichever comes sooner) NOTE ➢ Definitions of Micro Small and Medium Enterprise: http://dcmsme.gov.in/ssiindia/defination_msme.htm ➢ **Fees paid is not refundable and non transferable under any circumstances**

Introduction

Thermal Analysis techniques are used in a wide range of disciplines, from pharmacy and foods to polymer science, materials and glasses. The wide range of measurements possible provide fundamental information on the material properties of the system under test, so thermal analysis has found increasing use both in basic characterization of materials and in a wide range of applications in research, development and quality control in industry and academia.

Thermal analysis is a very useful technique in various industrial research projects – in particular, for the polymer industry. Using TGA one can find the degradation temperature, filler percentage, thermal stability of polymer at desired temperature etc. And using DSC, easy and fast determination of glass transition temperature, melting and crystallization temperature, heat of crystallization, heat of fusion, very fast determination of purity, fast heat capacity measurement, characterization of thermosets and measurement of liquid crystal transitions. Kinetics evolution of chemical reactions such as cure, polymer crystallization is also possible. Dynamic Mechanical Analysis, otherwise known as DMA, is a technique where a small deformation is applied to a sample in a cyclic manner. This allows the materials response to stress, temperature, frequency and other values to be studied.

The workshop is designed with strong focus on practical aspects of thermal analysis techniques as getting correct data and interpreting it correctly is very important.
Participants will be benefited enormously by the treasure of knowledge and experiences of the expert in the field. The workshop will be interactive so that participants can go back and handle their equipments correctly and confidently.

Course Outline

- Overview of thermal analysis techniques and applications (emphasis on polymers)
- Principle of operation of DSC, TGA & DMA
- Instrumentation of DSC, TGA & DMA
- Interactive session – Case studies and applications of DSC, TGA & DMA
- Practical session – sample preparation, setting up an experiment and run a sample
- Interpretation of results
- Tour to NCL for demonstration of latest thermal analysis equipments

Course includes

- Course material including slides, case studies and application notes
- Access to restricted website with online compilation of resources for thermal analysis
- One-on-one feedback on data interpretation exercise
- Certificate of Participation issued by Venture Center
- Course includes tea and lunch at Venture Center cafeteria

***Please note, the participants will have to arrange for their own travel/local transport and accommodation and dinners.**

- For accommodation (standard and budgeted hotels) please visit: www.venturecenter.co.in/puneguide/standard.php
- For accommodation (deluxe and luxury hotels) please visit: www.venturecenter.co.in/puneguide/deluxe.php
- For local transport details visit: www.venturecenter.co.in/puneguide/taxi.php

Workshop Schedule			
Time	Session title	Lead	
Day 1	**3 August 2018**		
0900-0930	Registration		Foyer area
0930 - 1030	Introduction to the course and faculty Overview-Thermal analysis techniques and applications	V Premnath /Manisha P NeelimaBulakh	Training Room, VC
1030 - 1100	Tea		Foyer area
1100 - 1230	• Understanding the DSC & TGA instruments in detail; typical experiments and runs • Interactive session – Real case studies and application notes	NeelimaBulakh	Training Room, VC
1230 - 1330	Lunch		Cafeteria, VC
1330 - 1600	Practical session: DSC & TGA – Instrumentation, Running the samples, Data Analysis Training	NeelimaBulakh MadhulikaBapat Edna Joseph	Lab Block, VC
1600 - 1630	Tea		Foyer area
1630 - 1700	One-on-one Q & A session with Faculty	NeelimaBulakh	Foyer area
Day 2	**4 August 2018**		
0930 - 1000	Tea		Foyer area
1000 - 1100	Overview of DMA; Instrumentation of DMA; Case Studies; Application notes	NeelimaBulakh	Training Room, VC
1100 - 1230	Time Temperature Superposition (TTS) - Theory & Applications	Ashish K Lele	Training Room, VC
1230 - 1300	Demo of DMA for soft materials; Tour of Venture Center	Edna Joseph	Cell Studio, VC
1300- 1400	Lunch		Cafeteria, VC
1400 - 1600	Practical session: DMA – Instrumentation, Preparing, loading & running the samples; analysis & data Interpretation; Demo of TTS	NeelimaBulakh SangeetaHambir	PAML, NCL
1600 - 1630	Tea		Foyer area
1630 - 1700	Closure – Feedback, Certificate distribution	V Premnath /Manisha P	Training Room, VC

Course Faculty

Dr. Ashish K Lele
Scientist

Dr. Ashish Lele did a B.E. in Chemical Engineering from UDCT, Mumbai followed by a PhD in Chemical Engineering from University of Delaware, USA and post-doctoral research from the University of Cambridge, UK. He was Chief Scientist in the Polymer Science and Engineering Division of the CSIR-National Chemical Laboratory. DrLele's research interests are in rheology of complex fluids and investigating links between rheology and melt processing of polymers.

Dr. (Mrs.) NeelimaBulakh
Scientist, CSIR- National Chemical Laboratory, Pune

NeelimaBulakh is Ph.D in Material Science and having 30 years of research experience in the field of polymers. Her area of interest includes polymers, polymer blends, crystallization and structure property relationship in polymers. Her research includes fundamental understanding of molecular motions responsible for ductility of the polymers using different polymer techniques and NMR. Currently she is working on High Temperature Polymer Electrolyte Fuel Cells.

NCL & Venture Center Team

Sangeeta Hambir,
CSIR-National Chemical Laboratory, Pune

Sangeeta hambir, has a Masters inPhysical Chemistry.She has more than 25 years of research experience in polymer. Her work includes polymer processing and characterization of polymers, setting up a web issue as Polyolefin Monitor & Q-Watch, development of security features for Indian currency notes etc.

Madhulika Bapat
Lab Associate, Venture Center

She is M.Sc in Biotechnology and has 5+ years of industry experience,with a recent work done as a Biotechnologist. Her responsibilities includes support incubatees and budding entrepreneurs by offering lab services; Contributing and ensuring smooth operations of lab block at VC; Operating lab in coordination with scientific mentors and advisors of the VC (including NCL scientists)

Edna Joseph
Associate Manager- Analytical Services, Venture Center

Edna has several years of experience in setting up and managing Venture Center's Lab facilities. She has demonstrated knowledge and understanding of many analytical instruments. She has run and assisted in proof-of-concept projects. Many technical and scientific workshops, especially those with hands-on lab exercises with lab instruments have been conceptualized, planned and organized by her.

About the organizers	
	AboutEntrepreneurship Development Center (Venture Center) – a CSIR initiative – is a Section 25 company hosted by the National Chemical Laboratory, Pune. Venture Center strives to nucleate and nurture technology and knowledge-based enterprises by leveraging the scientific and engineering competencies of the institutions in the Pune region in India. The Venture Center is a technology business incubator supported by the Department of Science & Technology's National Science & Technology Entrepreneurship Development Board (DST-NSTEDB). Venture Center focuses on technology enterprises offering products and services exploiting scientific expertise in the areas of materials, chemicals and biological sciences & engineering. For more information, visit http://www.venturecenter.co.in/
	About CSIR- National Chemical Laboratory National Chemical Laboratory (CSIR-NCL), Pune, established in 1950, is a constituent laboratory of Council of Scientific and Industrial Research (CSIR). CSIR-NCL is a science and knowledge based research, development and consulting organization. It is internationally known for its excellence in scientific research in chemistry and chemical engineering as well as for its outstanding track record of industrial research involving partnerships with industry from concept to commercialization. For more information, visit http://www.ncl-india.org/Default.aspx