



Venture Center  
 100, NCL Innovation Park  
 Dr. Homi Bhabha Road, Pune –411008  
 Email: [lab@venturecenter.co.in](mailto:lab@venturecenter.co.in)  
 Phone: +91-20-6401-1027

Technical Workshops Series – 2011/03

## One-Day Intensive Workshop on Thermal Analysis – DSC & TGA

Wave 3

- Organized by SPIRIT, NCL and Venture Center -

Learn	Principles of thermal analysis; Types of thermal analysis – especially DSC and TGA; 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; Workshop will emphasize polymeric/ soft materials; Workshop is intended to be basic.
Organized by	<ul style="list-style-type: none"> <li>• SPIRIT: Sustainable Polymer Industry through Research, Innovation and Training - A Centre of Excellence in Polymers at National Chemical Laboratory, Pune sponsored by the Department of Chemicals and Petrochemicals</li> <li>• Venture Center – a Technology Business Incubator</li> </ul>
For whom	<ul style="list-style-type: none"> <li>• Industry professionals wishing to expand their skill sets</li> <li>• Students and staff of polymer/ materials sciences/ engineering/ analytical/physical chemistry wishing to equip themselves for industry jobs</li> <li>• Maximum 20 seats; First-come-first-serve.</li> </ul>
When	<b>Saturday, 17th December 2011, 8.30am – 4.45 pm</b>
Where	Training Room and Lab Block, Venture Center, 100 NCL Innovation Park, Dr. Homi Bhabha Road, Pune-411008
Contact	Ms. Lipika Biswas Phone: 020-25865877/64011026 Email: <a href="mailto:eventsdesk@venturecenter.co.in">eventsdesk@venturecenter.co.in</a>
Cost	<ul style="list-style-type: none"> <li>• Medium and large companies: Rs 4000</li> <li>• Micro and small enterprises/Individuals: Rs. 2000</li> <li>• Students with valid ID card: Rs 1000</li> <li>• NCL students and staff: Rs 900</li> </ul>



Venture Center  
100, NCL Innovation Park  
Dr. Homi Bhabha Road, Pune –411008  
Email: [lab@venturecenter.co.in](mailto:lab@venturecenter.co.in)  
Phone: +91-20-6401-1027

## 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.

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.

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. This workshop aims to prepare people for R&D/ QC/QA functions in such industries.

## Course Outline

- Overview of thermal analysis techniques and applications (emphasis on polymers)
- Principle of operation of DSC & TGA
- Instrumentation of DSC & TGA
- Interactive session – Case studies and applications of DSC & TGA
- 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 .




Venture Center  
100, NCL Innovation Park  
Dr. Homi Bhabha Road, Pune –411008  
Email: [lab@venturecenter.co.in](mailto:lab@venturecenter.co.in)  
Phone: +91-20-6401-1027

Time	Session title	Lead
8.30 to 9:00	Registration	
9:00 to 9:30	Introduction to the course and faculty	Dr V Premnath/ Dr AK Lele
	Overview-Thermal analysis techniques and applications	Dr Neelima Bulakh
9:30 to 10:00	Tea	
10:00 to 12:00	Understanding the DSC & TGA instruments in detail; typical experiments and runs	Dr Neelima Bulakh
	Interactive session – Real case studies and application notes	Dr Neelima Bulakh
12:00 to 13:00	Lunch	
13:00 to 15:00	Practical session – Instrumentation, Running the samples, Interpretation of data	Mrs Sujaya Ingale Ms Edna Joseph
15:00 to 15:30	Tea	
15:30 to 16:30	Visit to NCL for demonstration of latest thermal analysis equipments – DSC, TGA and DMA	Dr Neelima Bulakh
16:30 to 16:45	Closure – Feedback, Certificate distribution	Dr V Premnath/ Dr AK Lele

Course includes
<ul style="list-style-type: none"><li>➤ Course material (hard copy) including slides, case studies and application notes</li><li>➤ Access to restricted website with online compilation of resources for thermal analysis</li><li>➤ One-on-one feedback on data interpretation exercise</li><li>➤ Certificate of Participation issued by Venture Center and SPIRIT - NCL</li><li>➤ Course includes tea and lunch at Venture Center cafeteria</li></ul>



Venture Center  
100, NCL Innovation Park  
Dr. Homi Bhabha Road, Pune –411008  
Email: [lab@venturecenter.co.in](mailto:lab@venturecenter.co.in)  
Phone: +91-20-6401-1027

Anchor Faculty	
	<p><b>Dr Mrs Neelima Bulakh</b>, Ph.D (Chemistry), M.Phil (Materials Science) is a Senior Technical Officer in Complex Fluids &amp; Polymer Engineering Group, Polymers &amp; Advanced Materials Laboratory, National Chemical Laboratory, Pune, India.</p> <p>She has 22 years research experience in the field of polymers, which includes crystallization, morphology and mechanical properties of polymers and polymer blends, polymer processing.</p>
Other faculty	<p>Dr AK Lele is Scientist, Complex Fluids and Polymer Engineering Group at NCL, Pune. He is also the Head of SPIRIT. Dr AK Lele is an accomplished Chemical Engineer with a strong research program in Polymeric Materials.</p> <p>Dr V. Premnath is Scientist, Complex Fluids and Polymer Engineering Group at NCL, Pune, Head, NCL Innovations and Director, Venture Center. He specializes in Polymer Science and Engineering.</p> <p>Mrs Sujaya Ingale and Ms Edna Joseph manage the Lab Block facility and related programs at Venture Center. They operate a Thermal Analysis facility amongst other instruments at the Lab Block.</p>

#### About the organizers

##### About Venture Center

Entrepreneurship 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's 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 SPIRIT at National Chemical Laboratory, Pune

SPIRIT stands for Sustainable Polymer Industry through Research, Innovation and Training. SPIRIT is a Centre of Excellence in Polymers sponsored by the Department of Chemicals and Petrochemicals, Government of India, at the CSIR-National Chemical Laboratory, Pune.



Venture Center  
100, NCL Innovation Park  
Dr. Homi Bhabha Road, Pune –411008  
Email: [lab@venturecenter.co.in](mailto:lab@venturecenter.co.in)  
Phone: +91-20-6401-1027