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Technical Workshops Series /Polymers/2012/04

One-Day Intensive Workshop on Particle Size Analysis & Colloidal Stability using DLS: Nano to Micro

- Organized by SPIRIT, NCL and Venture Center -

Learn	Principles of Dynamic Light Scattering (DLS). Theory of scattering and detection. Understanding the instrumentation including various sampling techniques and detectors. Theory of Zeta potential and colloid stability. Applications of DLS in particle size analysis and in molecular weight determination. Application of zeta potential in observing behavior of dispersive systems and characterization of electrical double layer on solid/liquid interfaces. Best practices in particle size analysis. Live demonstration of experiments; Mini-workshop on data interpretation with real data; Quick update on latest techniques/developments; Workshop is intended to be basic.
Organized by	<ul style="list-style-type: none">• 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• Venture Center – a Technology Business Incubator
For whom	<ul style="list-style-type: none">• Industry professionals wishing to expand their skill sets (Industries – Pharma; Paints; Cement; Polymers; FMCG etc)• Students and staff of polymer/ materials sciences/ engineering/ analytical/physical chemistry wishing to equip themselves for industry jobs• Maximum 20 seats; First-come-first-serve.
When	Saturday, 18 August 2012, 9 am – 5:45 pm
Where	Board Room, Venture Center, 100 NCL Innovation Park, Dr. Homi Bhabha (Pashan) Road, Pune-411008
Contact	Ms. Lipika Biswas Venture Center, 100, NCL Innovation Park, Dr. Homi Bhabha Road, Pune – 411008; Phone: +91-20-20250934; Email: eventsdesk@venturecenter.co.in
Cost	<ul style="list-style-type: none">• Micro and small enterprises/ individuals: Rs 2000• Medium and large companies/ others: Rs 4000• Students with valid ID card: Rs 900



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Introduction

Particle Size is an important physical property of particulate samples and particle size measurement is a commonly used technique in a wide range of industries including **pharma, paint, cement, polymer, drug** etc. Knowing and controlling the particle size is very important for product development, processing, manufacturing and quality control. Zeta potential is of critical importance in determining the stability of colloids.

This workshop aims to give an introduction to the principles and practice of Particle Size Analysis for industry professionals and students. The workshop will be conducted by an NCL scientist and Industry expert, both having vast experience working in Dynamic Light Scattering. The workshop includes lab demonstrations and data interpretation exercises. The workshop shall also discuss some recent trends and new developments in research and industry relating to **particle size analysis and stability of colloids**.

Course Outline

- Principles of Dynamic Light Scattering.
- Theory of scattering and detection.
- Understanding the instrument including various sampling techniques and detectors.
- Theory of Zeta potential and colloid stability.
- Applications of dynamic light scattering including particle size analysis, molecular weight determination.
- Applications of Zeta potential in dispersive systems and characterization of electrical double layer.
- Best practices in particle size analysis.
- Live demonstration of experiments and lab tour.
- Mini-workshop on data interpretation with real data.
- Quick update on latest techniques/developments.



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Time	Session title	Lead
9:00 to 9:30	Registration	
9:30 to 9:45	Introduction to the course and faculty	Dr. V Premnath
9:45 to 10:30	Introduction and basic principles of DLS; General terms and parameters used in particle size analysis; Sample preparation techniques; Quick overview of particle size analysis; Typical data recorded.	Dr. Suresh Bhat
10:30 to 11:00	Tea	
11:00 to 11:45	Introduction to Zeta potential; Applications	Mr. Manoj Bhataria
11:45 to 12:15	Instrumentation; Types of Laser sources; Types of sampling cells and their compatibility with various solvents; Types of detectors	Mr. Viral Patel Mr. Manoj Bhataria
12:15 to 13:00	Applications of DLS; Molecular weight determination, Interactive session – Real case studies and application notes.	Dr. Suresh Bhat Mr. Manoj Bhataria
13:00 to 14:00	Lunch	
14:00 to 14:30	Best practices in particle size analysis.	Dr. Suresh Bhat
14:30 to 16:30	Practical Session <ul style="list-style-type: none"> • Instrument parts • Sample preparation • Standard samples & Nanoparticle analysis • Pharmaceutical drug particle analysis • Data interpretation exercise • Calculations 	Mr. E. Venugopal Dr. Suresh Bhat Mr. Manoj Bhataria
16:30 to 17:00	Tea	
17:00 to 17:45	Closure – Feedback, Certificate distribution	Dr. V Premnath

Anchor Faculty	
	<p>Dr. Suresh Bhat Scientist E1, Polymer Science and Engineering Department, National Chemical Laboratory, Pune.</p> <p>Dr. Bhat has extensive expertise in the field of Light scattering from complex fluids, Protein-Polysaccharide interactions, Aggregation, Gelation and phase separation in soft materials. His areas of interest are Investigation of Structure, Dynamics & Rheology of Soft Materials using Scattering Techniques, Structure Property Relationships, Application of Nanoscience concepts to food technology, Developments of novel scattering tools for soft matter research.</p>
	<p>Mr. Manoj Bhataria Director, RGB Technologies Pvt. Ltd., Mumbai.</p> <p>Mr. Bhataria founded Brookhaven Instruments India in 1996, which later transformed into the Particle Science group at the RGB Technologies Pvt. Ltd, Mumbai. He has extensive experience in particle sizing using Light Scattering as well as sedimentation, zeta potential analysis, molecular weight analysis, spray drying, thin films, etc. He is also an automation expert and developed new products for industrial use.</p>
<p>Other Faculty</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>Mr. Viral Patel has been associated for about a year with the Particle Science group of RGB Technologies Pvt. Ltd, Mumbai. He handles the sales and installation of products from Brookhaven Instruments Corp as well as Sono-tek Corp. He has hands on experience on sample preparation methods required for characterization using light scattering.</p> <p>Mr. E. Venugopal is Senior Research Fellow, Polymer Science & Engineering Division, NCL, Pune. His current research is in studying the phase behavior of colloids and polymers in the presence of guest components. He extensively uses state of the analytical techniques like Light scattering, Small angle X-ray Scattering (with Level 3 access), Optical Microscopy and Confocal microscopy.</p> <p>Mrs. Sujaya Ingale and Ms. Edna Joseph shall organize and assist in lab demos.</p>



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Course includes

- Course notes (hard copy) including slides, case studies, application notes
- Lab demo and tour to see Particle Size Analyzer with zeta potential attachment
- Access to restricted website with online compilation of resources for Particle size Analysis
- One-on-one feedback on data interpretation exercise
- Certificate of Participation issued by Venture Center and SPIRIT - NCL
- Course includes tea and lunch at Venture Center cafeteria

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. More information: <http://www.pamlab.org/spirit/>