

A Report on the
One-Day Workshop on

Gas adsorption Technique and Dynamic Light Scattering (DLS) Technique

March 11, 2022



Organised by

Department of Chemistry

Rajiv Gandhi University
Arunachal Pradesh

In association with

Anton Paar India Pvt. Ltd.

Gurgaon, INDIA

Contents

<i>Acknowledgements</i>	<i>iii</i>
<i>Organizing Committee</i>	<i>iv</i>
Part 1 PREFACE	
1.1. Background	1
1.2. Objectives	1
1.3. Themes	2
1.4. Resource Persons	2
1.5. About the Sponsoring Agency	2
1.6. Budget	2
Part 2 SESSION WISE DETAILS	
2.1. Technical Sessions	2
Part 3 OUTCOME OF THE PROGRAMME	
3.1. Immediate implications in the context of Knowledge	3
3.2. Policy Implications	3
3.3. Other Implications (if any)	3
Part 4 ANNEXURES	
Annexure I: Programme Schedule	4
Annexure II: List of Participants	5
Annexure III: Photographs	6
Annexure IV: Media Coverages	6

One-day Workshop on
**Gas Adsorption Technique and Dynamic
Light Scattering (DLS) Technique**

March 11, 2022



Acknowledgements

Rajiv Gandhi University

Rono Hills Doimukh
Arunachal Pradesh



Anton Paar India Pvt. Ltd.

Gurgaon, INDIA

Organising Committee



Prof. Saket Kushwaha
Vice Chancellor
Rajiv Gandhi University

PATRONS



Prof. Amitava Mitra
Pro Vice Chancellor
Rajiv Gandhi University



Dr. Nabam T. Rikam
Registrar
Rajiv Gandhi University



Dr. Rajesh Chakrabarty
Head, Department of Chemistry
Rajiv Gandhi University

COORDINATOR



Dr. Md. Harunar Rashid
Department of Chemistry
Rajiv Gandhi University

MEMBERS



Dr. Lakhinath Saikia
Department of Chemistry
Rajiv Gandhi University



Dr. Dwipen Kakati
Department of Chemistry
Rajiv Gandhi University



Dr. Ramen Jamatia
Department of Chemistry
Rajiv Gandhi University



Dr. Bharat Kumar Allam
Department of Chemistry
Rajiv Gandhi University

PART 1: PREFACE

1.1 Background

Gas adsorption is of major importance for the characterisation of a wide range of porous materials. Of all the many gases and vapours, which are readily available and could be used as adsorbate, nitrogen has remained universally pre-eminent. With the aid of user-friendly commercial equipment and on-line data processing, it is now possible to use nitrogen adsorption at 77 K for both routine quality control and the investigation of new materials. In view of the importance of the technique, it is of interest to the researchers to learn more on the technique.

The light scattering is another most common measurement technique for particle size analysis in the nanometre range and estimating surface charges of colloidal particles. Dynamic light scattering (DLS) is based on the Brownian motion of dispersed particles. When particles are dispersed in a liquid they move randomly in all directions and constantly colliding with solvent molecules. These collisions cause a certain amount of energy to be transferred, which induces particle movement. The energy transfer is more or less constant and therefore has a greater effect on smaller particles. As a result, smaller particles are moving at higher speeds than larger particles. If one knows all other parameters which have an influence on particle movement, he/she can determine the hydrodynamic diameter by measuring the speed of the particles.

This one day Workshop provides robust discussions on principle and application of gas adsorption and dynamic light scattering techniques which are very much essential tools for chemistry and materials science research. This workshop surely provided basic theoretical concepts and hands on training on dynamic light scattering techniques to the researchers and the young faculties.

1.2 Objectives

The specific objectives of the workshop are to:

- introduce the basics of gas adsorption and dynamic light scattering technique among the students and young researchers of the university
- understand how to operate the instruments and analyze the collected data for scientific presentation

1.3 Themes

This Workshop on Gas adsorption technique and dynamic light scattering (DLS) technique is being organized on the theme: “Analytical techniques in Basic Research.” It featured lectures and demonstration on the techniques by Application Specialist from Anton Paar India Pvt. Ltd.

1.4 Resource Person



Dr. Rishi Gupta

Application Specialist

Anton Paar India Pvt. Ltd. Gurgaon, India

1.5 About the Sponsoring Agency

Anton Paar develops, produces and distributes highly accurate laboratory instruments and process measuring systems, and provides custom-tailored automation and robotic solutions. It is the world leader in the measurement of density, concentration and CO₂ and in the field of rheometry. Anton Paar GmbH is owned by the charitable Santner Foundation.

1.6 Budget

Not applicable.

PART 2: SESSION WISE DETAILS

2.1 Technical Session

More than 31 delegates from different department of Rajiv Gandhi University took part in the event. Dr. Rishi Gupta delivered lecture of the workshop on gas adsorption technique and dynamic light scattering technique. In his first lecture, Dr. Rishi discussed in details the basic principle of gas adsorption technique and application. In his second lecture, he discussed the basics of dynamic light scattering and electrophoretic light scattering & application. The third lecture includes the demonstration of dynamic light scattering and electrophoretic light scattering technique (model: Litesizer 500) for particle size and zeta potential analysis.

PART 3: OUTCOME OF THE PROGRAMME

3.1 Immediate Implications in the Context of Knowledge

It is our belief that the experience acquired during the workshop will help the participants in their future research in terms of analysis using the techniques.

3.2 Policy Implications

Although there is no such policy implication per se, it is our belief that the workshop will help the participants in analyzing materials samples using those techniques.

3.3 Other Implications (if any)

NA

PART 4: ANNEXURES

Annexure I: Programme Schedule

11 March 2022

- 3.00 pm – 3.45 pm Basics of Gas sorption techniques & application
- 3.45 pm – 3.55 pm: Tea Break
- 3.55 pm – 4.30 pm: Basics of Dynamic Light Scattering & Electrophoretic Light Scattering & Application
- 4.30 pm – 5.30 pm: Demonstration of Dynamic Light Scattering & Electrophoretic Light Scattering Technique (Model: Litesizer 500) for Particle Size & Zeta Potential analysis

Speaker: **Dr. Rishi Gupta**, Application Specialist, Anton Paar India Pvt. Ltd., Gurgaon, India

Annexure II: List of Participants

Sr. No.	Name	Designation	Affiliation
1.	Xavy Borgohain	Research Scholar	Rajiv Gandhi University, Arunachal Pradesh
2.	Amar Jyoti Bhuyan	Research Scholar	Rajiv Gandhi University, Arunachal Pradesh
3.	Babul Kalita	Research Scholar	Rajiv Gandhi University, Arunachal Pradesh
4.	Prakash Bhuyan	Research Scholar	Rajiv Gandhi University, Arunachal Pradesh
5.	Utpal Dutta	Research Scholar	Rajiv Gandhi University, Arunachal Pradesh
6.	Rei Star	Research Scholar	Rajiv Gandhi University, Arunachal Pradesh
7.	Jinku Borah	Research Scholar	Rajiv Gandhi University, Arunachal Pradesh
8.	Saddam Iraqui	Research Scholar	Rajiv Gandhi University, Arunachal Pradesh
9.	Karishma Devi Borah	Guest Faculty	Rajiv Gandhi University, Arunachal Pradesh
10.	Ramen Jamatia	Assistant Professor	Rajiv Gandhi University, Arunachal Pradesh
11.	Bharat Kumar Allam	Assistant Professor	Rajiv Gandhi University, Arunachal Pradesh
12.	Kenma Gibi	Laboratory Assistant	Rajiv Gandhi University, Arunachal Pradesh
13.	Koj Grayu	Technical Assistant	Rajiv Gandhi University, Arunachal Pradesh
14.	Tage Seema	Research Scholar	Rajiv Gandhi University, Arunachal Pradesh
15.	Manab Jyoti Goswami	Research Scholar	Rajiv Gandhi University, Arunachal Pradesh
16.	Parismrita Dutta	Student	Rajiv Gandhi University, Arunachal Pradesh
17.	Greeshma Chetry	Student	Rajiv Gandhi University, Arunachal Pradesh
18.	Dikshita Hazarika	Student	Rajiv Gandhi University, Arunachal Pradesh
19.	Kabita Bhuyan	Student	Rajiv Gandhi University, Arunachal Pradesh
20.	Monalisha Pegu	Student	Rajiv Gandhi University, Arunachal Pradesh
21.	Neha Singh	Student	Rajiv Gandhi University, Arunachal Pradesh
22.	Durga Kumari	Student	Rajiv Gandhi University, Arunachal Pradesh
23.	Mingkim Tatak	Student	Rajiv Gandhi University, Arunachal Pradesh
24.	Osik Tayeng	Student	Rajiv Gandhi University, Arunachal Pradesh
25.	Likar Ete	Student	Rajiv Gandhi University, Arunachal Pradesh
26.	Abhijeet Das	Research Scholar	Rajiv Gandhi University, Arunachal Pradesh
27.	Asinja Meme	Student	Rajiv Gandhi University, Arunachal Pradesh
28.	Tage Lampung Rinyo	Student	Rajiv Gandhi University, Arunachal Pradesh
29.	Taba Jumsi	Student	Rajiv Gandhi University, Arunachal Pradesh
30.	Plabita Rajkhowa	Research Scholar	Rajiv Gandhi University, Arunachal Pradesh
31.	Rekhamoni Das	Research Scholar	Rajiv Gandhi University, Arunachal Pradesh

Annexure III: Photographs



Dr. Rishi Gupta delivering the lecture



Hands-on training by Dr. Rishi Gupta

Annexure IV: Media Coverages

NA