



DEPARTMENT: SCHOOL OF PHARMACY

CIRCULAR

No: AJU/SOHAS/036/24

Date 4th March 2024

It is hereby notified that a virtual session: Dr. D. K. Tripathi on "Theoretical and Practical Aspects of Rheology for Pharmaceutical Formulations: An Industrial Approach" on 11th, 13th, 15th and 18th of March 2024 at 2:30 pm. Venue will be seminar hall of SISHRUTA on virtual mode. Students informed to join generously.

School of Pharmacy
ARKA JAIN University Jharkhand

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Theoretical and Practical Aspects of Rheology for Pharmaceutical Formulations: An Industrial Approach

Date of Event	11/03/2024 - 18/03/2024
Name of the Event	Theoretical and Practical Aspects of Rheology for Pharmaceutical Formulations: An Industrial Approach
Type of the Event	Technical Skill Development
Conducted by	School of Pharmacy
No. Of Participant	102

OBJECTIVE: The objective of conducting the session on Rheology for pharmaceutical formulations was to empower participants with knowledge, skills, and insights that are essential for success in the pharmaceutical industry.

DETAILS: A virtual session on the Theoretical and Practical Aspects of Rheology for Pharmaceutical Formulations: An Industrial Approach was conducted by the School of Pharmacy, ARKA JAIN University at Sushruta, Block B seminar hall from March 11th to 18th, 2024. The keynote speaker for the session was Dr. Dulal Krishna Tripathi, former Dean of the Faculty and Chairman BOS, Chhattisgarh Swami Vivekananda Technical University, Bilai, India. The session aimed to provide insights into the fundamental concepts of Rheology and its application in pharmaceutical industries. On Day 1, the session commenced with a warm welcome note by Ms. Purnima Mahato, Assistant Professor at ARKA JAIN University, followed by an introduction by Dr. Jyotirmaya Sahoo, Dean of the School of Health and Allied Sciences. Day 1 focused on introductory topics including Rheology, determination of viscosity, viscosity, and its relation with resistance, selection of viscometers, Ostwald viscometer, Brookfield viscometer, deformation, plastic deformation. Day 2 delved into more advanced topics including the rate of shear and shearing stress, Newton's law of flow, fluidity, kinematic viscosity, the effect of temperature, and non-Newtonian fluids. The session aimed to provide a deeper understanding of the behaviour of fluids under different conditions and their relevance in pharmaceutical formulations. The third day of the session focused on plastic flow, pseudo plastic flow, dilatants flow, Bingham bodies, rotational viscometer, thixotropy and bulges and spears. These topics shed light on the diverse properties of fluids and their behaviour, crucial for formulating pharmaceutical products. The final day of the session witnessed Dr. Dulal encouragement and acknowledgment of the enthusiasm and dedication shown by the students throughout the session. He emphasized the practical implications of the topics covered and their significance in the pharmaceutical industry. The session concluded with a question-answer round, allowing students to clarify their doubts and consolidate their understanding.

The session proved to be highly informative and engaging, providing students with valuable insights into the theoretical and practical aspects of Rheology in pharmaceutical formulations. The initiative taken by Dr. Jyotirmaya Sahoo and the coordination efforts of Ms. Purnima Mahato, Mr. Pravas Ranjan Das, and Mr. Ashutosha ensured the success of the session. Students appreciated the opportunity to learn from Dr. Dulal Krishna Tripathi's expertise and expressed gratitude for the well-organized and conceptualized session.

OUTCOMES: The session on Rheology for pharmaceutical formulations provided deeper insights into rheological principles, enhanced practical skills, and improved problem-solving abilities. Attendees also benefited from networking opportunities, motivation from industry experts, and valuable knowledge transfer, contributing to their professional growth and development.



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Poster of the Event



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Outlook
ICARE RANKING
2023

RANKED 3rd
IN "TOP-15 EMERGING
PRIVATE UNIVERSITIES IN INDIA" CATEGORY



School of Pharmacy

Organizes



Session on

THEORETICAL AND PRACTICAL ASPECTS OF RHEOLOGY FOR PHARMACEUTICAL FORMULATIONS: AN INDUSTRIAL APPROACH



Professor (Dr.) D. K. Tripathi

Former Dean of the Faculty & Chairman BOS,
Chhattisgarh Swami Vivekanand Technical University,
Bilai, India

Date: 8th, 10th January, & 11th, 13th, 15th March, 2024

Time : 2:30 PM onwards | **Venue :** Blended mode

arkajainuniversity

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1800 - 1200 - 200

Photos of the Event



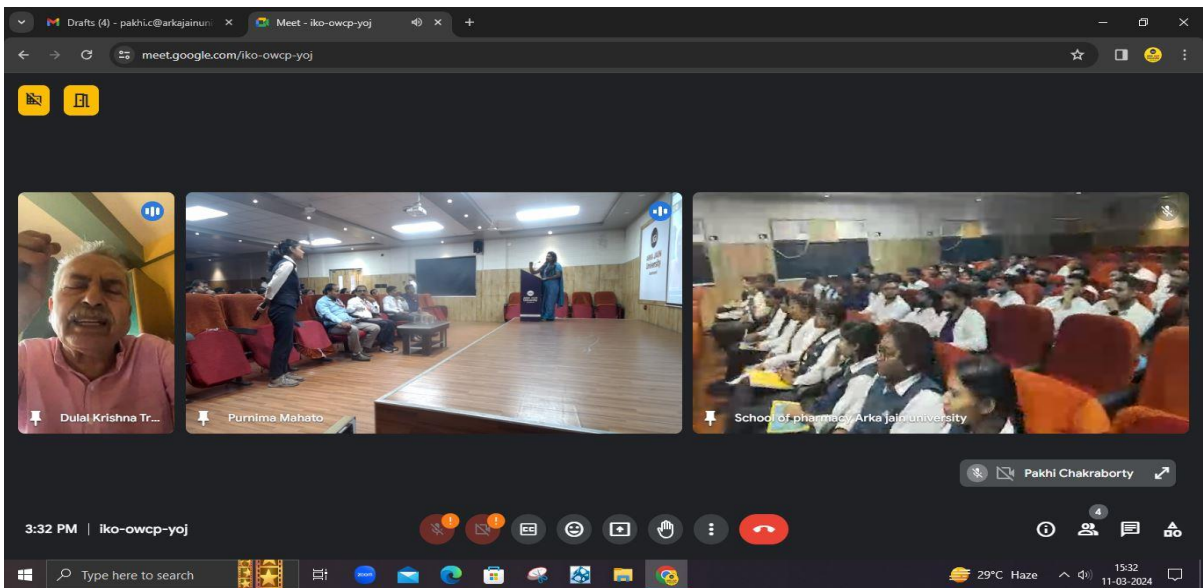
Students actively participate to broaden their understanding of Rheology



Students actively participate in discussions with Dr. Dulal Krishna Tripathi, gaining valuable insights into Rheology for pharmaceutical formulations



Students igniting their curiosity and passion for understanding Rheology in Pharmaceutical Formulations



Students fully engrossed, listening attentively to every word during the session

Brookfield Viscometer

- Easy to use, flexible, reliable performance and quality of service have made Brookfield Laboratory Viscometers favourite to all who have used.
- Internal spring is used to calculate the viscosity of a material. These springs have different measuring capabilities:
 - LV is for low viscosity materials and can measure the thinnest materials. Typical examples include inks, oils, and solvents.
 - RV is for medium viscosity materials than those measured with an LV torque. Typical examples include creams, food, and paints.
 - HA is for higher viscosity materials than those measured with an RV torque. Typical examples include gels, chocolate and epoxies.
 - HB is for even higher viscosity materials than those measured with an HA torque-spring. Typical examples include asphalt, caulking compounds, and molasses.

FIG. 12: DIAGRAM OF BROOKFIELD VISCOMETER

Dr. Tripathi sharing his insights about Brookfield viscometer

Shearing Stress and Rate of Shear

- **Rate of Shear:** Suppose a block of liquid is sliced into parallel plates as shown in the Fig. 1, the bottom layer is considered to be fixed. If the top layer is forced to move at a constant velocity, each subsequent lower layer will move with a velocity directly proportional to the distance from the stationary bottom layer. The difference of velocity dv between two planes of liquid separated by an infinitesimal distance dr is the velocity gradient, or dv/dr or rate of shear is denoted by G .
- **Shearing Stress:** The force per unit area, F/A required to effect flow of the fluid is called shearing stress, usually expressed as F . Higher the viscosity of a liquid (fluid), greater is the force per unit area (shearing stress) required to produce a certain rate of shear.

$$F \propto G$$

$$F = \eta G$$

$$\eta = \frac{F}{G} = \frac{\text{Shear stress}}{\text{Rate of shear}}$$

Sir emphasizes the importance of shearing stress and rate of shear in formulations

Feedback Analysis

