



**Institution's Innovation Council
Saurashtra University Rajkot**

**“Formulation and Characterization of
Nano Particulate Drug Delivery System”**

On

24th to 26th March 2025

At

Department of Pharmaceutical Sciences
Saurashtra University Campus, Rajkot

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Saurashtra University – IIC

The university is dedicated to instruction, research, and extending knowledge to the public (public service). Ministry of Education (MoE), Govt. of India has established 'MoE's Innovation Cell (MIC)' to systematically foster the culture of Innovation among all Higher Education Institutions (HEIs). The primary mandate of MIC is to encourage, inspire and nurture young students by supporting them to work with new ideas and transform them into prototypes while they are informative years. Saurashtra University is one the Organization that have constituted the IIC to foster the vision of MoE and be a part for the promotion and development of innovation ecosystem.

Event Schedule

Day 1 Date: 24/03/2025			
Time	Title of the Sessions	Name of expert & Affiliation	Venue / Location
10.00 AM to 10.45AM	Registration & Breakfast		Pharmacy Extension Building, Saurashtra University, Rajkot.
11.00 AM to 12.00AM	Inaugural Session		
Technical Session			
12.00 AM to 01.00PM	Lecture session:1 Tailoring Mesoporous Nanoparticles From Synthesis to Drug Delivery Application	Dr. Nasir Vadia Professor, Department of Pharmaceutical Sciences, Faculty of Health Sciences, Marwadi University, Rajkot.	
1:00 PM TO 2:00 PM	Lecture session:2 Diverse Application of Nano- Medicine for Cancer Therapeutics.	Dr. Priya Patel Head of the Department, Department of Pharmaceutical Sciences, Saurashtra University, Rajkot	
1:30 PM TO 2:30PM	Lunch		
2.30 PM to 5.00 PM	Lab Session: 1 Hands-on training in the Development of Nano medicine- Solid Lipid Nanoparticles using various technologies. (Using Equipment: High-Speed Homogenizer, Lipex Extruder & High-pressure Homogenizer	Dr. Arti Bagada, Associate Professor, Department of Pharmaceutical Sciences, Saurashtra University, Rajkot	
4: 00 PM to 4:15 PM	High- Tea		

Day 2 Date: 25/03/2025			
Time	Title of the Sessions	Name of expert & Affiliation	Venue / Location
10.30 to 11.00 AM	Tea & Breakfast		Pharmacy Extension Building, Saurashtra University, Rajkot.
12.00 to 01.00 PM	Lecture session:4 Role of Nano medicine in the Pharma- healthcare sector	Dr. Sunny shah Associate Professor, Govt. Pharmacy college, Gandhinagar.	
1.30 to 2.30 PM	Lunch		
2.30 PM to 5: 00 PM	Lab Session: 2 Hands-on training in the Development of Nano medicine- Polymeric Nanoparticle Using Various Technologies (using a High-Speed Homogenizer & Spray Dryer)	Dr. Priya Patel Head of the Department, Department of Pharmaceutical Sciences, Saurashtra University, Rajkot.	
4: 00 PM to 4:15 PM	High- Tea		
Day 3 Date: 26/03/2025			
Time	Title of the Sessions	Name of expert & Affiliation	Venue / Location
10.30 AM to 11.00AM	Tea & Breakfast		Pharmacy Extension Building, Saurashtra University, Rajkot.
11.00 AM to 12.00 PM	Lecture session:5 Key consideration in choosing variables for Nano particulate Drug Delivery system.	Dr. Kevin Garala Professor, Atmiya Institute of Pharmacy, Atmiya University, Rajkot	
12.00 to 01.00 PM	Lecture session:6 Release Modulation for Enhancing Bioavailability Through Nano particulate Drug Delivery Systems.	Dr. Arti Bagada, Associate Professor, Department of Pharmaceutical Sciences, Saurashtra University, Rajkot	
1:30 PM TO 2:30 PM	Lunch		

2.30 PM to 4: 00 PM	Lab Session: 3 Hands-on training in the Development & Characterization of Nano particulate Drug Delivery systems using Various Instruments (High-Speed Homogenizer & Differential Scanning Calorimetry (DSC)).	Dr. Arti Bagada, Associate Professor, Department of Pharmaceutical Sciences, Saurashtra University, Rajkot	
4: 00 PM to 5:00 PM	Valedictory Function & Certificate Distribution		

Event Registration Link

bit.ly/CFSD-FCNDDS

Brief about Event

A workshop on "Formation and Characterization of Nanoparticulate Drug Delivery System" was organized by Skill Development Centre and Department of Pharmacy, Saurashtra University in collaboration with IIC, Saurashtra University from 24 to 26 March 2025. HOD of Pharmaceutical Sciences Dr. Priya Patel and event coordinator Dr. Arti Bagada was informed all the students about Formulation and Characterization of Nano particulate Drug Delivery System.

The event was held at Seminar room, Department of Pharmaceutical Sciences, Saurashtra University. Then after speaker was greeted with a token of book, Trophy and appreciation. Speaker informed the students about Formulation and Characterization of Nano particulate Drug Delivery System. its uses and benefits were explained. Nano particulate drug delivery systems are engineered technologies that use nanoparticles to deliver drugs in a targeted and controlled manner, minimizing side effects and improving drug efficacy. These systems offer advantages like prolonged circulation time, enhanced drug solubility, and controlled release.

Nanomaterials exhibit different chemical and physical properties or biological effects compared to larger-scale counterparts that can be beneficial for drug delivery systems. Some important advantages of nanoparticles are their high surface-area-to-volume ratio, chemical and geometric tenability, and their ability to interact with biomolecules to facilitate uptake across the cell membrane. The large surface area also has a large affinity for drugs and small molecules, like ligands or antibodies, for targeting and controlled release purposes.

Nanoparticle drug delivery focuses on maximizing drug efficacy and minimizing cytotoxicity. Fine-tuning nanoparticle properties for effective drug delivery involves addressing the following factors. The surface-area-to-volume ratio of nanoparticles can be altered to allow for more ligand binding to the surface. Increasing ligand binding efficiency can decrease dosage and minimize nanoparticle toxicity. Minimizing dosage or dosage frequency also lowers the mass of nanoparticle per mass of drug, thus achieving greater efficiency. Current nanoparticle drug delivery systems can be cataloged based on their platform composition into several groups: polymeric nanoparticles, inorganic nanoparticles, viral nanoparticles, lipid-based nanoparticles, and nanoparticle albumin-bound technology. Each family has its unique characteristics.

It was understood by the speaker that nano-sized materials have more advantages over other dosage forms with larger particle sizes, as they can provide more surface area and increased solubility. It also provides the facility of controlled drug release with the ability to deliver the entrapped therapeutic agents to the desired site. Nano drug delivery systems are widely studied for oral delivery of drugs. Oral delivery is the most preferred route of drug administration due to convenience, patient compliance and cost-effectiveness. This system has also been used to enhance the bioavailability of drugs with poor bioavailability. However, due to the small size, extensive research was conducted on the administration of these systems through various parenteral routes such as intravenous, intramuscular and subcutaneous routes. Drugs loaded in nano drug delivery systems also show improved shelf life and stability.

Key Points

During the session, below mentioned points were discussed:

- Nano drug delivery systems are classified based on the morphological characters, structure.
- Nanoparticulate drug delivery is a potential technique that has recently gained much interest in detecting, monitoring.
- Nanoparticles can offer significant advantages over the conventional drug delivery in terms of high stability, high specificity.
- Nanoparticles can improve medicine delivery to small locations within the body.
- Benefits of Nano particulate Drug Delivery System.

Outcome

The workshop provided participants with in-depth knowledge of nanoparticulate drug delivery systems, their formulation, characterization, and practical applications in improving drug efficacy. Students gained insights into the advantages of nanoparticles, such as targeted delivery, controlled release, enhanced solubility, and reduced side effects. The session enhanced their understanding of different nanoparticle platforms and their role in modern drug delivery, motivating them to explore advanced research and applications in pharmaceutical sciences.

The poster features logos at the top for Saurashtra University, Koushal Vikas Kendra, SSIP, Institution's Innovation Council, StartUp, and SEC. The main title is 'Workshop Formulation and Characterization of Nanoparticulate Drug Delivery System'. Below this, it states the workshop is organized by the Centre For Skill Development and Department of Pharmacy, Saurashtra University, in collaboration with IIC, Saurashtra University, during 24th to 26th March 2025. The dates and start time (10:00 AM onwards) are listed next to a calendar icon. The location is Seminar Hall, Department of Pharmacy, Saurashtra University, indicated by a location pin icon. At the bottom, there is a website link (www.susec.ac.in), a QR code, a call number (8490991979), and social media handles (@susecrajkot) for LinkedIn, Instagram, Twitter, YouTube, and Facebook.

Workshop
Formulation and Characterization of Nanoparticulate Drug Delivery System

Centre For Skill Development and Department of Pharmacy, Saurashtra University in collaboration with IIC, Saurashtra University organizes workshop on
"Formulation and Characterization of Nanoparticulate Drug Delivery System"
during 24th to 26th March 2025

24th to 26th March 2025
Start At 10:00AM onwards

Seminar Hall, Department of Pharmacy
Saurashtra University

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