

MEMORANDUM OF UNDERSTANDING (MOU)

between

**SAINT PETERSBURG STATE UNIVERSITY OF
AEROSPACE INSTRUMENTATION (SUAI)**

located at 67, lit. A, Bolshaya Morskaya str., St. Petersburg, 190000, RUSSIA

represented by the Rector Dr. Yulia A. Antokhina

and

K. R. MANGALAM UNIVERSITY (KRMU)

Sohna Road, Gurugram, 122103, India

represented by Director International Collaborations Dr. Saurav Dixit

hereinafter collectively referred to as "**Parties**" and individually as "**Party**".

NOW THEREFORE, THE PARTIES HEREBY AGREE AS UNDER:

1. OVERALL AIM AND OBJECTIVE OF COLLABORATION

- 1.1. The KRMU, Gurugram, India and SUAI, St. Petersburg, Russia having decided to enter cooperative relationship for general purpose of promoting educational research, academic collaboration, and cultural programmes for the mutual benefit of both the Parties.
- 1.2. The Parties shall promote opportunities for co-operation within the above-mentioned areas. Such activities may include, but not limited to:
 - 1.2.1. Working on joint research projects including the participation of both faculty and students.
 - 1.2.2. Organizing and hosting joint seminars, conferences, and FDP's.



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- 1.2.3. Co-operation on academic administrative and curriculum matters.
- 1.2.4. Participation for projects.
- 1.2.5. Joint publication in common area of interest.
- 1.2.6. Using the common facilities and labs of both universities by the faculty and students.
- 1.2.7. Development of joint programs/ semester abroad programs in common areas of interest.
- 1.2.8. Exchange of academic and administrative staff and students.

2. SCOPE OF THIS MEMORANDUM OF UNDERSTANDING:

- 2.1. This memorandum records the intention of the Parties to explore areas of joint activity which further the overall Aim and Objectives described above. It is not a legally binding agreement. Neither Party will use the name of the other in any published documents or publicity material, except with the consent of the other Party.
- 2.2. Each activity carried out within the broad framework of this Memorandum shall be subjected to mutual consent of both parties considering constraints of time, funding, and other relevant resources.

3. FACILITATORS

The Parties shall nominate one or more representatives, who shall be the point of contact/ facilitator ("Facilitators") for the purposes of this MOU. The Facilitators of the respective Parties shall maintain regular contact with each other. Further, they shall propose and review the response received from the participants for the workshops, joint conferences, research proposals and working on funding projects that may be conducted pursuant to this MOU and in furtherance to fulfilling the purpose and objectives envisioned under this MOU.

Facilitators:

1. Dr. Kaushal Kumar (KRMU)
2. Dr. Kirill Epifancev (SUAI)

4. RESOURCES

Both the Universities will support their own researchers, and the labs & equipment's can be shared with mutual understanding.



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5. FINANCIAL UNDERSTANDING

5.1. All the parties shall bear the expenses on their own.

5.2. Logistic:

KRMU and SUAI shall bear the expenses of logistics, boarding and lodging for their faculty and students by their own.

6. TERM

6.1. This MOU shall come into effect from the Execution Date and shall remain in force for a period of one year thereafter.

6.2. This MOU shall terminate after completion of the term of one year from the Execution Date, without any financial obligations of Parties.

6.3. The Parties may execute similar agreements for similar initiatives in future or even extend the term of this MOU for such further periods as mutually agreed to by the Parties.

6.4. Either Party may voluntarily terminate this MOU by giving a 3 months' notice in writing to the other.

7. MISCELLANEOUS

i) Anything in addition to scope of responsibility or task mentioned in this MOU will require a separate approval or MOU.

ii) This MOU can only be amended in writing by mutual consent of both the Parties. No modification or amendment to this MOU and no waiver of any of the terms or conditions hereof shall be valid or binding unless made in writing and duly executed by or on behalf of both the Parties.

iii) If any provision of this MOU shall be invalid, illegal, or otherwise unenforceable, the validity, legality and enforceability of the remaining provisions shall in no way be affected or impaired thereby.

iv) The captions of the clauses of this MOU are for convenience of reference only and in no way define, limit, or affect the scope or substance of any clause of this MOU.

v) The arrangement contemplated herein being in nature of cooperative strategic alliance for general wellbeing, no monetary consideration is involved.

vi) None of the provisions of this MOU as stated above shall be deemed to constitute a partnership between SUAI and KRMU and neither Party shall have any authority to bind or shall be deemed to be the agent of the other in any way. It is on principle-to-principal basis.



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IN WITNESS WHEREOF the Parties hereto have executed this MOU, in duplicate,
by their duly authorized representatives on the date, month and year first written
above.


Director International Collaboration
K R Mangalam University
Gurugram / Delhi, India-122103

For SUAI
Dr. Valeriy Matiash
Acting Rector



For KRMU
Prof. (Dr.) Saurav Dixit
Director International Collaboration

Date:


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Sohna Road, Gurugram, (Haryana)



K.R. MANGALAM UNIVERSITY
THE COMPLETE WORLD OF EDUCATION

Ref No.: KRMU/SOET/Notice/2021-22/

Date: 17.01.2022

SCHOOL OF ENGINEERING AND TECHNOLOGY

NOTICE

The School of Engineering & Technology has collaborated with the State University of Aerospace and Instruments in Saint Petersburg, Russia, and the State University of Management in Moscow, Russia, to organize an international conference on the Design and Applications of Multifunctional Materials, Interfaces, and Composites. The aim of this conference is to share the latest technological advancements in Multifunctional Materials, Interfaces, and Composites on a global level. All faculty members and research scholars are invited to be a part of this event. The event will be conducted virtually and will be coordinated by Dr. Saurav Dixit and Dr. Kaushal Kumar.


Date: June 4-6, 2022

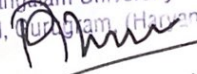
Venue: Virtual Mode

Event In-Charge:

Dr. Saurav Dixit

Dr. Kaushal Kumar


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Dr. Pankaj Agarwal

Dean SOET
DEAN
School of Engineering & Technology (SOET)
K.R. Mangalam University
Sohna road, Gurugram
Haryana 122103



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Gurugram, Delhi-NCR

Online

International Conference

on

**Design and Applications of Multifunctional
Materials, Interfaces, and Composites**

DAM2IC-2022

4th - 6th June, 2022



**Publication
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In Collaboration with

State University of Management,
Moscow, Russia



State University of Aerospace instruments,
Saint Petersburg, Russia



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20/12/2021

K.R. Mangalam University

K.R. Mangalam University is located at wonderful location with magnificent view of Aravalli hills. The University offers 65+ UG, PG and Doctoral programs in Applied Sciences, Engineering, Computer Sciences, Pharmacy, Business Management, Education, Media Studies, Law, Governance, Architecture, Hotel Management, Agriculture etc. The University has an excellent infrastructure with state-of-art laboratories, computer labs, library and campus wide Wi-Fi facility. The University is ably led by the Chancellor Prof. Dr. Dinesh Singh, who is a great visionary and educational administrator. VC Prof. Chandra Shekhar Dubey and Pro-VC Prof. Dr. P. Tripathi, ensure innovative pedagogy quality of teaching and research.

About the Conference

School of Engineering and Technology K. R. Mangalam University, Gurgaon in Association with State University of Aerospace and Instruments, Saint Petersburg, Russia, organizing the International Conference on Design and Applications of Multifunctional Materials, Interfaces, and Composites (DAM2IC) 4-6 June 2022 in online mode. [Click here to know more.](#) K. R. Mangalam University invites full length original research contributions from science, engineering professionals from industries, R&D organisations, academic institutions, government departments and research scholars from across the world. Full length original research contributions and review articles not exceeding seven pages in single column format shall be submitted.

Call for Papers

DAM2IC 2022 invites full length original research contributions from science, engineering professionals from industries, R&D organisations, academic institutions, government departments and research scholars from across the world. The original research contributions and review articles not exceeding ten pages in single column format shall be submitted (more than 7 pages will be charged additionally). Proceedings of DAM2IC 2022 will be published in the "Elsevier's Materials Today: Proceedings" - a journal specializing in the publication of conference proceedings and indexed in SCOPUS with cite score 1.8. Please submit the full length research articles to dam2ic2022@gmail.com. Authors upon acceptance from the conference and subsequent presentation, shall upload their manuscripts in the Editorial Manager of Materials Today Proceedings. To upload, [click here](#). When you reach the "Article Type" step in the submission process. All camera ready papers should be as per the template of Materials Today. [Click here to download the template](#).



Topics of interest for submission include, but are not limited to:

- Materials Science and Engineering
- Materials Property and Characterization
- Multifunctional Metals, Ceramic, and Composites
- Bulk Metallic Glass (BMG)
- Supply Chain Management
- Blockchain
- Green Materials
- Hard/Soft Coating/Cladding Corrosion and their Applications
- Recycling and re-manufacturing of materials and Components
- Feature Engineering Polymers
- Multi-Functional Magnetic Materials
- Nanostructured Materials
- Active Polymers, Materials, and Actuators
- Smart Biomaterials and Bio-Inspired Smart Materials and Systems
- Heat Treatment
- Energy Storage Materials and Energy Harvesting
- Laser-Energy Beam Processing
- High speed and Hybrid Machining
- Laser Based Manufacturing
- Material Testing
- MEMS Integration
- Smart and intelligent materials
- Functional materials
- Chemical materials
- 3D materials
- Cryogenic materials
- Ceramics, shape memory alloys and nanomaterials
- Polymer science
- Mechanical design
- Casting technology and equipment
- Welding technology and equipment
- Automation
- Industrial automation and process control
- Intelligent controllers
- Virtual instrumentation in automation
- Iron & steel manufacturing methods and new approaches
- Refractories in iron & steel industry
- Fracture and fatigue behavior of iron & steel
- Novel coating materials
- Sustainable energy materials
- Fly-ash
- Tribology
- Smart materials
- Application of Additive Manufacturing and 3D Printing In Nanocomposites
- Application of Nanoporous Structures in Biomedical Application
- Innovative Surface Engineering Techniques to Synthesis Surface Nanocomposites
- Nanocomposites for Aerospace, Health Care, Energy Materials, Sensors and Other Systems Motivates
- Environmental Coordination Materials
- Meta materials
- Metallography
- Multi-Physics Coupling Simulation and Optimization
- Numerical Modelling and Simulation
- Optimization Techniques
- Powder Metallurgy and Ceramic Forming
- Super Alloys
- Characterization of Nano Structured materials/ composites/Polymers/ Nano Wires/ Nano Fibers / Nano Tubes and Their Applications

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Paper Submission Details

Paper Submission Link :

Click here or DAM2IC@gmail.com Authors upon acceptance from the conference and subsequent presentation, shall upload their manuscripts in the Editorial Manager of Materials Today Proceedings to upload, click here. Please select "SI: DAM2IC 2022" when you reach the "Article Type" step in the submission process. As per the Elsevier's latest policy, the editorial manager for the conference proceedings will be open for submission only after the conference has taken place. Hence, the submissions for SI: DAM2IC 2022 will open on 07.06.2022 in the Editorial Manager of the Materials Today Proceedings. Only the registered papers for SI: DAM2IC 2022 will be allowed to submit in the Editorial Manager.

Registration Fee

- Students/Research Scholar ₹ 6500/-
- Faculty ₹ 8000/-
- Industry Delegate ₹ 10000/-
- Poster ₹ 4000/-
- Listener ₹ 2000/-
- Extra page charges ₹ 500/- Per Page (more than 7 pages)
- International Delegate \$ 200

Publications

All the accepted papers of DAM2IC 2022 will be published in the "Elsevier's Materials Today: Proceedings". All papers must be original, and within the scope of materials science.

Top 50 research articles will be published in special issue of MRS Advances (Springer)

The proceedings will be indexed in Scopus Conference Proceedings Citation Index (Thomson Reuters, Web of Science)

Important Dates

- Last date to submit a full-length article (Extended) : 20th May 2022
- Decision by : 23th May 2022
- Registration : 25th May 2022
- Final Camera-ready article submission by : 30th May 2022
- Final schedule to be uploaded by : 31st May 2022

Key Note Speakers

Dr. Nikolai Vatin
Saint Petersburg, University,
Saint Petersburg, RUSSIA



Dr Satish Kumar
Associate Professor,
Department of Mechanical
Engineering, NIT
Jamshedpur, INDIA



Chander Prakash
Jyoti Professional University,
Punjab, INDIA



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Conference (DAM2IC 2022) Report

International Conference by Department of Mechanical Engineering, SOET

Introduction

An international conference on "Design and Applications of Multifunctional Materials, Interfaces, and Composites (DAM2IC-22)" on June 4-6, 2022 through virtual mode was organized by the Department of Mechanical Engineering of School of Engineering and Technology (K. R. Mangalam University) in association with State University of Aerospace and Instruments, Saint Petersburg, Russia and the State University of Management, Moscow, Russia to share the latest research trends in technology at the global level.

More than 200 young and dynamic technocrats and research enthusiasts shared a common platform to exchange their ideas and work with like-minded audiences. The presence of dignitaries, an impressive lineup of scholars from across the globe, the support of sponsors (SERB) and media partners, and an array of carefully selected, well-researched and well-presented papers of the related domain are significant aspects were base of successful completion of the conference. The conference was applauded for the 6 sessions besides the Inaugural and Valedictory sessions. This Conference has, without a shade of doubt, made the academic fraternity richer, with the additional literature in form of scholarly works on the subject. This three-day event offered opportunities to the participating audiences to interact with academicians, scholars, and experts from all over the world who deliberated upon and covered topics around the recent trends in Multifunctional Materials, Interfaces, Composites, etc. The views expressed and explored on this platform by the resource persons and paper presenters made the audience rethink ideas which we cling on to unthinkingly in our day-to-day life.

Each session began with the address of coordinator and introduces the session chair with series of presenters. Each presenter was allowed for the presentation of 20 minute (inclusive Q&A round from audience and session chairperson). The Conference owes its success to the able guidance of Chairman Mr. Rohit Gupta, and the hard work put in by the entire organizing team led by Dr. Kaushal Kumar (Convenor), Prof. (Asst.) Kriti Sharma, Prof. (Asst.) Sarah Khan, Dr. Jamail Singh, Dr. Prabhakar Bhandari, Dr. Bhavesh Vyas and Prof. (Asst.) Surendra Kumar Yadav. The Hon'ble Chief Guest Dr. Krill inaugurated the Conference on 4th July 2022 along



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with Dr. Saurav Dixit, being the Chairperson for this session. Dr. Kaushal Kumar, Convenor of the conference presented the theme of the conference in a lucid manner for the understanding of the audience. Luminaries from the world of research and academics that graced the event included Dr. M. D. Naushad Javed (SMAS, K. R. Mangalam University), Dr. Lalit Ranakoti (Graphic Era Deemed to be university), Dr. Sahil Mehta (SOAS, K. R. Mangalam University), Dr. Kamal Singh Rawat (MIET, Meerut), Dr. Krill (St. Petersburg State University of Aerospace Instrumentation, Russia), Dr. Gurmeet (Chandigarh University, Chandigarh), Dr. Vikas Goyat (SRM University Delhi-NCR Campus), Dr. Kristina (West Pomeranian University of Technology, Szczecin, Poland), Dr. Himanshu Manchanda (Guru Jambheshwar University of Science and Technology, Hisar), Dr. Satish Kumar (NIT, Jamshedpur), Dr. Chandra Mohan (SBAS, K. R. Mangalam University), Dr. Narendra Budhiraja (Satish Chander Dhawan Govt. College Ludhiana, Punjab).

Objectives

- Integration of the scientific community and academician involved in different areas of materials.
- Presentation of the latest research results in the field of materials and its related areas.
- Exchange of ideas and experience of the research and work in material engineering.
- Identification of new scientific research areas and practical challenges
- Training and development of the academic staff/ Research Scholar/ Industry persons.



Content for the event

The Conference Paper Review Committee has accepted only 150 out of more than 200 research paper received. All the resource persons conducted very engaging and fruitful sessions. Total of six plenary sessions were conducted during the conference and the details of each session are tabulated in Table. 1.

Session No.	Session Chair	Session co-Ordinator
1	Dr. M. D. Naushad Javed Dr. Lalit Ranakoti	Dr. Prabhakar Bhandari, Dr. Jamail Singh
2	Dr. Sahil Mehta Dr. Kamal Singh Rawat	Dr. Kaushal Kumar Dr. Saurav Dixit
3	Dr. Krill	Prof. (Asst.) Kriti Sharma

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	Dr. Gurmeet	Prof. (Asst.) Sarah Khan
4	Dr. Vikas Goyat Dr. Kristina	Dr. Bhavesh Vyas Dr. Prabhakar Bhandari
5	Dr. Himanshu Manchanda Dr. Satish Kumar	Prof. (Asst.) Kriti Sharma Prof. (Asst.) Sarah Khan
6	Dr. Chandra Mohan Dr. Narendra Budhiraja	Dr. Kaushal Kumar Dr. Jamail Singh

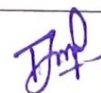
Further, each plenary session was also awarded one best paper based on the various parameters viz, Presentation, Innovation, Result and Conclusion, time duration and Applicability to the society. To provide the best paper in the session, the award sheet containing the detailed specification about the presenter was shared with both the session chairs. Based on scores given by both session chairs, the best paper was selected. The details of the best paper awardee for each session are tabulated in Table 2.

Session No.	Paper ID	Presenter	Paper Title
1	8348	Md Zia Ul Haq	Effect of using plastic waste on mechanical properties of fly ash based geopolymer concrete
2	3381	Nirmal Singh	Synthesis and Characterization of Metal-Based Nanoparticles and their Effect on Seed Quality Parameters of American Varieties of Cotton
3	5299	Neeti Arora	An experimental study based on heat transfer and pressure drop analysis of Al_2O_3 /water Nano fluids in a circular tube
4	6889	Saurabh Jain	Block chain Technology and Healthcare 4.0: A Quick Overview
5	8623	Pascal Muam Mah	Integration of Sensors and predictive analysis with Machine learning as a modern tool for economic activities and a major step to fight against climate change
6	1456	Jennifer Robinsons	Sustainable and environmental friendly energy material

Outcomes

Expected outcomes of the conference are:

1. Shared understanding on recent development in Multifunctional Materials, Interfaces, and Composites.



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2. Interactions among various researchers and academicians regarding advancement in the materials, Nano applications, Internet of Things, Artificial Intelligence and Machine Learning.
3. The attendees learned about the interdisciplinary/ multi-disciplinary aspects approach for the optimization of research in the current scenario.
4. Provide a platform to interact with international aspirants in terms of latest research.

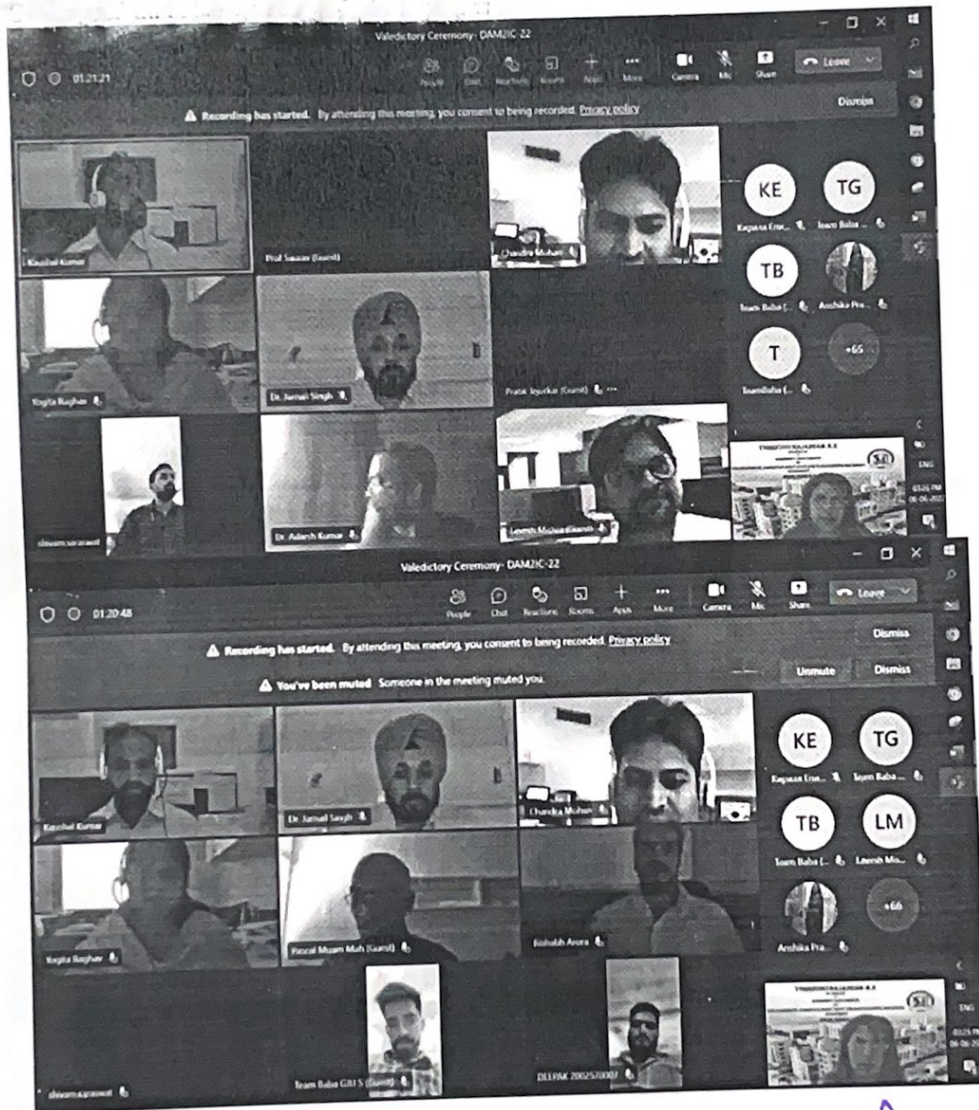
Conclusion

A successful international conference on "Design and Applications of Multifunctional Materials, Interfaces, and Composites" lead to an exchange of innovative and remarkable work, ideas and upcoming future scope in the field of Nanotechnology, materials, concreters and many more domains to count upon. Further, various paths of collaborative research work were opened and gave fruitful outcomes in near future in terms of publications and patents. More than 200 young researchers shared a common platform to present their work in form of research papers.



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Glimpse during Conference (DAM2IC 2022)



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04:09:56

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Participants:

- BV (Large Video)
- DS (Dr. Jarnal S...)
- AP (Anam Kum...)
- Dr. Prabhakar...
- Sarika
- MM (Mayer Mal...)
- Sahil Mehta
- Dr. Vikas Goyal (Guest)
- Kaushal Kumar

Participants (11):

- DK
- DG
- SK
- MH
- KS
- Kirti Sharma (Organizer)
- dharmendra kumar (Guest) (Mouling guest)
- Dr. Jarnal Singh
- Dr. Prabhakar Bhandari
- Dr. Vikas Goyal (Guest) (Mouling guest)
- Kaushal Kumar
- Sahil Mehta
- Sarah Khan

Presentations (1):

- Prospection of fabrication techniques and material selection of micro needles for transdermal drug delivery: An Update on clinical trials

Abstract:

Introduction:

Transdermal drug delivery is a non-invasive route of drug administration. It offers several advantages over other routes of drug administration, such as avoidance of first-pass metabolism, ease of use, and portability. However, the low permeability of the skin is a major barrier to the transdermal delivery of many drugs. Micro needles (MNs) are a promising technology for overcoming this barrier. They are small, hollow needles that can be used to deliver drugs directly into the skin. MNs can be made from various materials, including metals, polymers, and silicon. They can be designed in various shapes and sizes, and they can be used for a variety of applications, including drug delivery, vaccine delivery, and diagnostic testing.

Figures:

Figure 1: Schematic diagram of a micro needle array. The array consists of a base and a needle. The base is made of a polymer material and has a central channel. The needle is made of a metal material and is inserted into the base. The needle has a sharp tip and a hollow lumen. The array is used to deliver a drug solution through the needle into the skin.

Figure 2: Photograph of a micro needle array. The array is a small, rectangular device with a central channel. It is made of a polymer material and has a sharp tip. The array is used to deliver a drug solution through the needle into the skin.

Table 1: Properties of micro needles

Property	Value
Length	1-2 mm
Diameter	0.1-0.5 mm
Material	Metals, Polymers, Silicon
Shape	Various shapes and sizes
Application	Drug delivery, Vaccine delivery, Diagnostic testing

Table 2: Comparison of micro needles with other drug delivery systems

System	Advantages	Disadvantages
Micro needles	Non-invasive, easy to use, portability	Low permeability of the skin
Oral	Easy to use, portability	First-pass metabolism
Intravenous	High bioavailability	Invasive, requires a trained professional
Intramuscular	High bioavailability	Invasive, requires a trained professional
Subcutaneous	High bioavailability	Invasive, requires a trained professional

Conclusion:

Micro needles are a promising technology for overcoming the barrier of the skin to transdermal drug delivery. They offer several advantages over other routes of drug administration, such as avoidance of first-pass metabolism, ease of use, and portability. However, the low permeability of the skin is a major barrier to the transdermal delivery of many drugs. MNs can be made from various materials, including metals, polymers, and silicon. They can be designed in various shapes and sizes, and they can be used for a variety of applications, including drug delivery, vaccine delivery, and diagnostic testing.

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01:37:23



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Attendees (17)

AS MG VK AP +41 KS

Introduction

- 1) Thermal energy storage (TES) is now widely presented as one of the most feasible solutions in achieving energy savings and environmentally correct behaviors.
- 2) There are various method of heat storage some of them are

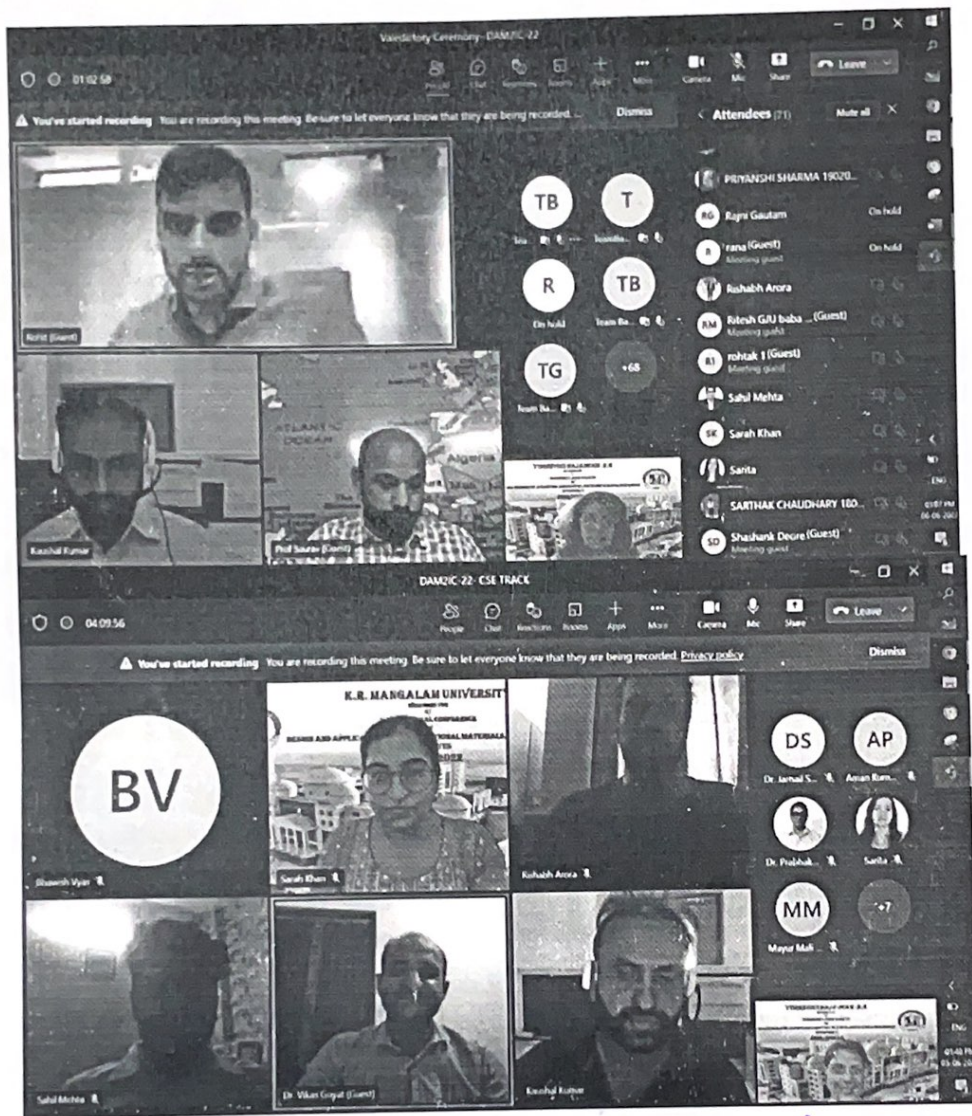



ADITYA KUMAR (Guest) (1) Types of thermal

Fig 1.1 Heating effect on PCM

11:33 AM 05-06-2022

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Prospect of fabrication techniques and material selection of microchannels for transdermal drug delivery: An Update on clinical trials

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Abstract

Introduction

Types

Conclusion

Keywords

References

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BK B. Jagan Kumar (Guest)

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DR Dr. Rangit Binstal (Guest)

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HR Harish Kumar (Guest)

Introduction

1) Thermal energy storage (TES) is now a days presented as one of the most feasible solutions in achieving energy savings and environmentally correct behaviors.

2) There are various method of heat storage some of them are

Fig. (1) Types of thermal energy storage

Fig. (2) Heating effect on PCM


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