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POWDER TECHNOLOGY CONCLAVE & EXHIBITION

Emerging Challenges & Opportunities

March 6 - 8, 2024

Department of Mechanical Engineering

THAPAR INSTITUTE OF ENGINEERING & TECHNOLOGY, PATIALA, INDIA

THEME

- Powder technology in clean energy and waste minimization
- Powder characterization for design quality
- Reliable powder flow in additive manufacturing processes
- High value powder production and processing
- Powder flow and processing in pharmaceutical industries
- Modelling and simulation, ML, digital twin in powder application
- Industry oriented workshops: hopper flow and conveying

WHO SHOULD ATTEND

- Manufacturers, suppliers for instruments, equipment, automation, software and systems
- Plant owners, managers
- Operation and maintenance, quality control engineers
- Design engineers and consultants,
- members of professional bodies
- Academicians, scientists, PhD/PG/UG students

BENEFITS OF ATTENDING

- Increased awareness of emerging challenges and identification of business opportunities on emerging powder materials, processes, equipment and instrument requirement and specifications
- Identification of business opportunities on converting/designing industrial systems as per Industry 4.0 practices with use of automation, artificial intelligence, simulation and digital twin
- Identification of future research and innovation direction/projects to provide solutions to emerging process, product, instrument, automation, software, simulation challenges
- Increased networking and academia-industry collaboration opportunities for R&D projects
- Opportunity to learn about the latest equipment/hardware/processes from the exhibitors

REGISTRATION DETAILS

Registration Fess	Last date: 5 th March 2024
Indian	Rs. 12,000
International	USD 700

Bank Name: IDBI Bank, Branch: Patiala
Account Name: Thapar Institute of Engineering & Technology
Account Number: 0267104000092579,
IFSC CODE: IBKL0000267, SWIFT CODE: IBKLINBB041
644 Opp Gurudwara, Kashmirian Main Road Tripuri, Patiala

- 18% GST to be added as extra on above.
- Students will be provided 40% discount. 20% discount for 3 or more participants attending from the same company.
- Registration once made, can not be withdrawn. However, alternative participant may be nominated.
- For invoice of payment/registration related query, write to powderflow@thapar.edu or call at +91 9417273900.
- After payment, payment details are to be emailed to powderflow@thapar.edu.

POWDER TECHNOLOGY RESEARCH AT TIET & SOLUTION TO INDUSTRY

Thapar Institute of Engineering & Technology (TIET) has India's largest powder characterization, flow property and conveying lab. The facility is developed with financial support from NTPC, DST, DST - SERB, CSIR, TIET, RIECO INDUSTRIES etc. & includes Dense-Phase and Vacuum Pneumatic Conveying Rig, Slurry Conveying Rig, Hopper Rig, Powder Flow Property Testers, Segregation Testers, Solar PV Panel Cleaning Rig, CFD and DEM Simulation Facility, and Advanced Characterization Equipment: FEG SEM with EDS, STEM, EBSD detectors, X-Ray diffraction with Bulk Texture & Residual Stress attachment, Raman Spectroscopy, DSC, TGA etc. The institute provided numerous research, testing and consulting solutions to NTPC, TATA Power, ISRO, Aditya Birla Group, Reliance, L&T, Hindalco, MBE, BGR, OPGC, HPGC, Rieco Industries, AirLock, Aatri Steel International, Lonestar Technical & Industrial Services, PSPCL, Vardhaman Industries etc.



CONTACT: Prof. S.S.MALLICK, PTC2024 CONCLAVE COORDINATOR, POWDER FLOW LABORATORY

Mechanical Engineering Department, Thapar Institute of Engineering & Technology, Email: ssmallick@thapar.edu, M: 9592697176

Powder Technology Conclave & Exhibition

March 6-8, 2024

Department of Mechanical Engineering
Thapar Institute of Engineering & Technology, Patiala, India



PROGRAM



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6TH MARCH 2024

8.15 AM – 8.50 AM	Registration + Networking Breakfast at Venue
8.50 AM – 9.35 AM	Inauguration
9.35 AM – 11.35 PM	POWDER ROLE IN SUSTAINABLE ENERGY, CONSTRUCTION, WASTE REDUCTION (PART I)
SESSION 1	Green Heat, Electricity and Fuel <i>Dr. G. Sridhar, Director General, Sardar Swaran Singh National Institute of Bioenergy, NIBE, Punjab, India</i>
Lecture (100 min)	Bulk Solids Handling on the Path Towards Net Zero <i>Dr. Mike Bradley, Director, The Wolfson Centre for Bulk Solids Handling Technology, University of Greenwich, UK</i>
Panel discussion (20 min)	Reliable Powder Handling Solutions for Power Plants through Academia-Industry Partnerships <i>Dr. S.S.Mallick, Thapar Institute of Engineering & Technology, India</i>
	Excellence through Innovation in Decarbonization and Sustainable Practices in Powder Handling: A Rieco (RIL) Perspective <i>Vikas Bhatia, Managing Director, Rieco Industries Limited, India</i>
	Solar PV Soiling A Dent in Clean Energy Production: Quantification and Mitigation <i>Prof. Chinmay Ghoroi, Department of Chemical Engineering, IIT Gandhinagar, India</i>
11.35 AM – 12.00 PM	Tea/Coffee + Exhibition
12.00 PM – 1.40 PM	POWDER ROLE IN SUSTAINABLE ENERGY, CONSTRUCTION, WASTE REDUCTION (PART II)
SESSION 2	Advances in Design of Handling Systems for Biomass and Waste Materials for Recycling, Energy from Waste Plants and Coal-to-Biomass Conversions <i>Dr. Mike Bradley, Director, The Wolfson Centre for Bulk Solids Handling Technology, University of Greenwich, UK</i>
Lecture (80 min)	Progressive Trend in Mortar Volumes / Sales of Construction Chemical Manufacturing <i>Sanjay Bhalla, CEO, MAPEI, India and Mr Alok Shrivastva, Country Head (India), MAPEI, India</i>
Panel discussion (20 min)	Ash Management for Sustainable Operation of Thermal Power Plants: Current Challenges & Action for Future <i>Manish Tiwari, Additional General Manager, NTPC, India</i>
	Municipal Solid Waste Adoption in Cement Industry – A Sustainable Practice <i>Sanjoy Paul, Engineering Manager, Development Consultants Pvt. Ltd., Kolkata, India</i>
1.40 PM – 2.25 PM	Lunch + Exhibition
2.25 PM – 4.25 PM	POWDER CHARACTERIZATION FOR DESIGN QUALITY
SESSION 3	Advanced Characterization for Powders <i>Prof. Rahul Mitra, Metallurgical and Materials Engineering, Indian Institute of Technology, Kharagpur, India</i>
Lecture (100 min)	Powder Properties Characterization vis a vis their Industrial Applications <i>Dr. Uttam Datta, Unilever Nutrition R&D Centre, India</i>
Panel discussion (20 min)	Universal Powder flow Characterisation: Quantifying Cohesive, Frictional and Interlocking Effects <i>Dr. Amalia Thomas, Senior R&D Officer, Freeman Technology, UK</i>
	Characterization of Silicon Carbide Powders for Battery Application <i>Dr. Kartik Pondicherry, Anton Paar GmbH. Graz, Austria</i>
	From Characterization to Designing Reliable Powder Handling Systems <i>Dr. S.S.Mallick, Rachit Poddar, Thapar Institute of Engineering & Technology, India</i>
4.25 PM – 4.50 PM	Tea/Coffee + Exhibition
4.50 PM – 6.50 PM	RELIABLE POWDER FLOW IN ADDITIVE MANUFACTURING PROCESSES
SESSION 4	Investigating the Spreadability of polymeric powders for Powder Bed Fusion Processes <i>Dr. Massimo Poletto, University of Salerno, Fisciano (SA), Italy</i>
Lecture (80 min)	Current Research Trends and Future Directions in Powder Based Additive Manufacturing <i>Dr. Pulak M. Pandey, Director, BIET Jhansi / Prof. IIT Delhi, India</i>
Panel discussion (20 min)	Applications of Additive Manufacturing in Medical World <i>Dr. Ravi Gupta, Director-Orthopaedics, Fortis Hospital, Mohali, India</i>
	Amplifying AM with Production Application <i>Raj Kumar, Regional Head North - Additive Manufacturing, Phillips Machine Tools India Pvt. Ltd., India</i>
	Manufacturing Reimagined with Reliable, Repetitive, Accurate Production Parts with 3D Printing-Technologies <i>Ganesh Babu T, General Manager – Applications, Additive Manufacturing, Designtech Systems Pvt. Ltd., India</i>
6.50 PM – 7.30 PM	Exhibitor Presentations
7.30 PM – 9.30 PM	Cultural Program + Award Ceremony + Networking Dinner

7TH MARCH 2024

8.15 AM – 8.50 AM	Networking Breakfast at Venue
8.50 AM – 9.30 AM	Innovation – The Vital Tool for Our Journey Towards Development <i>Chander Prakash Arora, Executive Director & Head Civil (Growth & Expansion), Dalmia Cement (Bharat) Ltd, India</i> Innovation – Lab to Fab <i>Dr. Inderpreet Kaur, Senior Principal Scientist, CSIR-Central Scientific Instruments Organisation (CSIO), India</i>
9.30 AM – 11.10 AM	HIGH VALUE POWDER PRODUCTION AND PROCESSING
SESSION 5 Lecture (80 min) Panel discussion (20 min)	Challenges in Manufacturing Fine Powders through Wet Chemical Synthesis <i>Dr. Parag Bhargava, Department of Metallurgical Engineering & Material Science, IIT Bombay, India</i> Functional Surface Engineering of Particles for Advanced Applications <i>Prof. Chinmay Ghoroi, Department of Chemical Engineering, IIT Gandhinagar, India</i> Regime Maps for Dry Powder Coating in the FT4 Rheometer and a Ribbon Mixer <i>Dr. Colin Hare, Senior Lecturer, University of Newcastle, UK</i> Effect of Particle Size, Processing Conditions and Preparatory Methods of Ferrite Powder for Microwave Absorbing Applications <i>Dilip Chaudhary, Scientist, Defense Laboratory, Jodhpur, Rajasthan, India</i>
11.10 AM – 11.35 AM	Tea/Coffee + Exhibition
11.35 AM – 1.35 PM	PHARMACEUTICAL POWDER CHARACTERIZATION, HANDLING, PROCESSING
SESSION 6 Lecture (100 min) Panel discussion (20 min)	Powder Processing in Pharmaceutical Industry <i>Dr. Arvind K. Bansal & Dr. S.S.Mallick, National Institute of Pharmaceutical Education and Research & TIET, India</i> Powder flowability measurement at low stresses <i>Dr. Colin Hare, Senior Lecturer, University of Newcastle, UK</i> Pharmaceutical Powder and Advanced Particle Surface Characterization <i>Dr. Archan Dey, Advanced Characterization Technology Lab, IPDO, Dr. Reddy's Laboratories, Hyderabad, India</i> Model Informed Process Development and Scale-up of Oral Solids: Business Perspective and Challenges <i>Dr. Pratap Kasina, Pharmaceutical Development, Novartis Health Care Pvt Ltd, Hyderabad</i> Strategic Fusion: Unleashing Synergistic Advancements in NIR and Powder Applications <i>Dr. Prakash Muthudoss, Director, A2Z4.0 Research & Analytics, India</i>
1.35 PM – 3.05 PM	Lunch + Exhibition + Laboratory Visit
3.05 PM – 4.45 PM	POWDER MODELLING AND SIMULATION
SESSION 7 Lecture (80 min) Panel discussion (20 min)	Simulating Industrial Scenarios: with the Open-Source Software MercuryDPM <i>Dr. Anthony Thornton, University of Twente, The Netherlands</i> Combining Simulation and Machine Learning for the Optimization of Powder Handling Processes with Altair Portfolio of Tools <i>Mohan S. Nainegali, DEM Solution Specialist, Altair, India</i> Predicting Swelling Driven Dispersion of Granular Products: Mechanistic Model Development <i>Dr. Rachel Smith, Department of Chemical and Biological Engineering, The University of Sheffield, UK</i> DEM Analysis for the Development of a Gravity-Driven Multi-Material Powder DED System <i>Dr. Sajan Kapil, Assistant Professor, Indian Institute of Technology, Guwahati, India</i>
4.45 PM – 5.10 PM	Tea/Coffee + Exhibition
5.10 PM – 6.50 PM	INDUSTRY 4.0: SENSORS, AI/ML, DIGITAL TWIN IN POWDER APPLICATION
SESSION 8 Lecture (80 min) Panel discussion (20 min)	From Sensors to Insights: Integrating Sensors, Statistics, AI/ML, Digital Twins in the age of Industry 4.0 <i>Dr. Prakash Muthudoss, Director, A2Z4.0 Research & Analytics, India</i> Industry 4.0 : Applications of Simulations and Data Analytics in a Continuous Manufacturing Process <i>Dr. Sushil Shirsath, Aditya Birla Science & Technology Co. Pvt. Ltd., Mumbai, India</i> The Rise of Digital Twins: How New-Age Technologies Are Revolutionizing the Way We Create and Use Virtual Representations of Physical Objects <i>Samit Sawal, Product Technology Architect, Infosys, India</i> Review of Mass Flow Meter for Powder Systems using Microwave, Ultrasonic and Capacitance Tomography <i>Dr. S.S.Mallick, Dr. Ashish Purohit, Dr. Amanpreet Kaur, Thapar Institute of Engineering & Technology, India</i>
7.00 PM – 8.30 PM	Networking Dinner

8TH MARCH 2024

8.15 AM – 8.50 AM	Networking Breakfast at Venue
8.50 AM – 9.00 AM	Announcements
9.00 AM – 11.00 AM	POWDER FLOW, DESIGN OF HOPPERS, PNEUMATIC CONVEYING, SEGREGATION
SESSION 9	Solids Discharge Rates from Hoppers <i>Dr. Gregory J Mehos, Professor and Consultant, Greg Mehos & Associates LLC, USA</i>
Lecture (100 min)	Pneumatic Conveying Pressure Drop Characterisation and Modelling for Lean Phase Transport of Many Different Materials
Panel discussion (20 min)	<i>Dr. Mike Bradley, Director, The Wolfson Centre for Bulk Solids Handling Technology, University of Greenwich, UK</i> Investigation Into Effect of Surface Texture and Electrostatic Charge on Particle Adhesion and Flow Properties Pharmaceutical Powders <i>Dr. Vivek Garg, Consulting Engineer, Wolfson Centre for Bulk Solids Handling Technology, University of Greenwich, UK</i> Pressure Drop through Bends at Different Orientations in Dilute Phase Pneumatic Conveying Systems <i>Dr. Naveen Mani Tripathi, Assistant Professor, Rajiv Gandhi Institute of Petroleum Technology, India</i> Evaluation of Segregation Index Using Pharmaceutical Formulations <i>Dr. Vivek Garg, Consulting Engineer, Wolfson Centre for Bulk Solids Handling Technology, University of Greenwich, UK</i>
11.00 AM – 11.20 PM	Tea/Coffee + Exhibition
11.20 PM – 1.20 PM	POWDER SEGREGATION, MIXING, SEPERATION, MATERIAL REMOVAL
SESSION 10	Design of Parabolic Conic Gas Cyclones for Coarse Particle Classification: A CFD Study with Response Surface Methodology <i>Arjun Kumar Pukkella, PhD student, Imperial College London, UK</i>
(120 min)	A Novel Calculation Procedure to Estimate Solids Rate in Air-Impeded Silo Discharge <i>Salvatore La Mannaa, PhD Student, University of Salerno, Italy</i> An Experimental Investigation into Flow Properties and Segregation Index of Powders <i>Rachit Poddar, PhD Student, Thapar Institute of Engineering & Technology, India</i> Integrative Approach Utilizing Machine Learning and Discrete Element Modeling to Predict Segregation and Average Velocity in Rotating Drums <i>Sunil Kumar, Research Scholar, Indian Institute of Technology, Roorkee, India</i> Influence of Shape-Dependent Polydispersity and Critical Length Scale of Percolation on Mixing in Vibrating Bed System <i>Praveen Dubey, Research Scholar, Indian Institute of Technology, Roorkee, India</i> Production, Morphological, Elemental and Rheological Studies of Mild Steel Grinding Swarf <i>Dr. Amarjit Singh, Research Scholar, National Institute of Technology, Hamirpur, India</i> Experimental investigation of erosion wear of guide vane in a slurry pot tester <i>Rohit Kumar Sahu, Indian Institute of Technology, Roorkee, India</i>
1.20 PM – 2.00 PM	Lunch + Exhibition
2.00 PM – 4.30 PM	INDUSTRY ORIENTED WORKSHOPS : DESIGN / SELECTION / CASE STUDIES (PARALLEL / BRANCH OUT SESSIONS)
SESSION 11	VENUE A: Flow Properties of Powders <i>A1. Prof. Massimo Poletto, University of Salerno, Fisciano (SA), Italy</i> <i>A2. Dr. Gregory J Mehos, Professor and Consultant, Greg Mehos & Associates LLC, USA</i>
(150 min)	VENUE B: Pneumatic Conveying of Powders <i>B1. Prof. Mike Bradley, Wolfson Centre for Bulk Solids Handling Technology, University of Greenwich, UK</i> <i>B2. Prof. S.S.Mallick, Thapar Institute of Engineering & Technology, India</i>
	VENUE C: Simulation of Bulk Solids <i>C1. Mohan S. Nainegali, DEM Solution Specialist, Altair, India</i> <i>C2. Dr. Colin Hare, Senior Lecturer, University of Newcastle, UK</i> <i>C3. Prof. Anthony Thornton, University of Twente, The Netherlands</i>
4.30 PM – 5.00 PM	Conclave Closure + High Tea