

*Post-Conference Report*



**AMMT**

**Conference 2022**

**6<sup>th</sup> INTERNATIONAL CONFERENCE ON ADVANCES IN MATERIALS AND  
MANUFACTURING TECHNOLOGY (AMMT-2022)**

**October 06th– 07th, 2022; Mode: Virtual**

**Organized by Department of Mechanical Engineering, CUIET, Applied  
Engineering, Chitkara University, Punjab, India**

**Email: [ammt2022@chitkara.edu.in](mailto:ammt2022@chitkara.edu.in)**



**CRC Press**  
Taylor & Francis Group

Publication Partners

**CHITKARA UNIVERSITY**

**AMMT**  
Conference 2022

**CRC Press**  
Taylor & Francis Group

**6th International Conference on Advances in Materials and  
Manufacturing Technology (AMMT-2022)**

**October 06th– 07th, 2022**

**Mode : Virtual**

Organized by Department of Mechanical Engineering, CUIET,  
Applied Engineering, Chitkara University, Punjab, India

## **AMMT-2022 Overview**

Department of Mechanical Engineering, Applied Engineering, CUIET, Chitkara University, Punjab conducted the 6<sup>th</sup> edition of International Conference on Advances in Materials and Manufacturing Technology (AMMT-2022) on 6<sup>th</sup> and 7<sup>th</sup> of October 2022 in virtual mode, under the Organizing Secretary Dr. Abhineet Saini, Associate Professor, Department of Mechanical Engineering, Applied Engineering, CUIET, Chitkara University, Punjab and Organizing Co-Secretary Dr. Vijay Kumar Sharma, Assistant Professor, Department of Mechanical Engineering, Applied Engineering, CUIET, Chitkara University, Punjab. The conference was a huge success with more than 100 papers presented in 04 tracks primarily focusing on Emerging Technologies in Engineering Materials and Manufacturing Technology, and interdisciplinary domains. A number of participants from around the globe, comprising of Academicians, Researchers, Industry personnel and Students, participated in the conference and presented their state-of-the-art research in AMMT-2022. Dr. Madhu Chitkara, Pro-Chancellor, Chitkara University, Punjab and Chitkara University, Himachal Pradesh was invited as the Chief Guest and ma'am addressed the audience by her words of knowledge and wisdom in the inaugural session and gave a green signal to start the conference. Dr. Archana Mantri, Vice-Chancellor, Chitkara University, Punjab was the Guest of Honor for this international conference and ma'am provided an insight to the technological developments in the domain areas of AMMT-2022, and promoted the budding researchers to publish quality research papers. Dr. Vijay Kumar Jadon, Dean of Academics, Applied Engineering, CUIET, Chitkara University, Punjab discussed about the legacy of AMMT conferences and the importance of such conferences to bring academicians and researchers all around the world on a common platform and contribute towards development of sustainable technologies for social welfare. Keynote addresses in the areas of composite materials, mobile CNCs and industrial design for space technologies were delivered, in three sessions spread over both the days, by national and international speakers. Dr. Gurjot Singh Dhaliwal, Director of Intertribal Research and Resource Center at United Tribes Technical College in Bismarck, USA, Dr. Mandeep Dhandra, Assistant Professor, Department of Production and Industrial Engineering, Punjab Engineering College, Chandigarh and Dr. Kaja Antleij, Senior Lecturer, Industrial Design, School of Engineering, Deakin University, Australia, were the keynote speakers. Multiple sessions were held for different tracks throughout both the days, and quality researches by different authors were presented. The best paper in each track was awarded in the valedictory

session of the conference. AMMT-2022 turned out to be a huge success and the Organizing Secretary in his valedictory note expressed his desire and need for such conferences in future as an active platform for presentation and exchange of ideas and thoughts amongst scientific community.

### **Introduction:**

Manufacturing industry has benefited the world economy with recent developments in technology design and research. Due to globalization and liberalization there is stiff competition in this industry for offering the products and services of the best quality, at the cheaper cost and within the desired delivery schedule. Global economy has been benefited with development of new materials and technologies. Carrying forward the theme of previous five editions of AMMT conferences, the sixth edition AMMT-2022 focuses on the latest developments in the field of advanced materials, manufacturing technology and their interdisciplinary domains. The purpose of AMMT is to broaden the technical knowledge, deepen the understanding of cutting edge research and networking with peers and colleagues from academia and industry. The major focus of the conference is to provide common platform to academicians, industrialists, research scholars and students to exchange their expertise and knowledge. The conference aims to provide an insight to the current trends in the field of materials science, manufacturing technology and its applications. It further intends to integrate various multi-disciplinary domains along with the advancements in traditional manufacturing practices applicable to different production systems. Effective developments in materials technology, primarily focusing on applications in biomedical science, automobile engineering, thermo-fluid mechanics, structural engineering and electromechanical systems would be covered. Moreover, it targets onto progressions related to process and product quality enhancement through improved industrial engineering and surface engineering practices, respectively.

Past Editions: The past editions of AMMT i.e. AMMT-11, AMMT-12 and AMMT-13, AMMT-14 and AMMT-2015 focused on the latest developments in the field of advanced materials and manufacturing technology to broaden the technical knowledge, deepen the understanding of cutting edge research and networking with peers and colleagues from academia and industry. The major focus of these conferences remained to provide common platform to academicians, industrialists, research scholars and students to exchange their expertise and knowledge.

**Inaugural Session:**



**Picture 1: Address by the Hon'ble Pro-Chancellor, Chitkara University, Punjab, Dr. Madhu Chitkara and Hon'ble Vice-Chancellor, Chitkara University, Punjab, Dr. Archana Mantri**



**Picture 2: Vote of thanks by the Organizing Secretary AMMT-2022, Dr. Abhineet Saini, Associate Professor, Department of Mechanical Engineering**

**Technical Committee:**

**Committees:**

<b>Responsibility</b>	<b>Name</b>	<b>Designation</b>
Patron	Dr. Ashok K. Chitkara	Hon'ble Chancellor, Chitkara University, Punjab
	Dr. Madhu Chitkara	Pro-Chancellor, Chitkara University, Punjab
Co-Patron	Prof. Archana Mantri	Vice-Chancellor, Chitkara University, Punjab
Organizing Chairman	Prof. Vijay Kumar Jadon	Dean of Academic Affairs, Applied Engineering, Chitkara University, Punjab
	Prof. Rajeev Kamal Sharma	Dean, Chitkara University, Punjab
	Prof. Ajay Goyal	Dean, Chitkara University, Punjab
	Dr. Gurdyal Singh	Chitkara University, Punjab
	Dr. Arrik Khanna	Chitkara University, Punjab
Organizing Secretary	Dr. Abhineet Saini	Chitkara University, Punjab

Organizing Joint-Secretary	Dr. Vijay Kumar Sharma	Chitkara University, Punjab
Organising Committee	Prof. Anoop Kumar Singh	Chitkara University, Punjab
	Prof. Rupesh Gupta	Chitkara University, Punjab
	Dr. Harvinder Singh	Chitkara University, Punjab
	Dr. Kulwinder Singh	Chitkara University, Punjab
	Dr. Rakesh Goyal	Chitkara University, Punjab
	Dr. Jaswinder Singh	Chitkara University, Punjab
	Dr. Rajesh Kumar	Chitkara University, Punjab
	Dr. Sunil Kumar	Chitkara University, Punjab
	Dr. Dhawan Singh	Chitkara University, Punjab
	Dr. Talvinder Singh	Chitkara University, Punjab
	Dr. Kamaljeet Singh	Chitkara University, Punjab
	Dr. Mohit Rana	Chitkara University, Punjab
	Dr. Mukeshwar Yadav	Chitkara University, Punjab
	Dr. Mohit Kalsia	Chitkara University, Punjab
	Dr. Deepam Goyal	Chitkara University, Punjab
	Dr. Sonu Sharma	Chitkara University, Punjab
	Dr. Ankit Sharma	Chitkara University, Punjab
	Dr. Prateek Srivastava	Chitkara University, Punjab
	Dr. Abhishek Kanoungo	Chitkara University, Punjab
	Dr. Akshay Chaudhary	Chitkara University, Punjab
	Dr. Akhilesh Kumar	Chitkara University, Punjab
	Dr. Pankaj Sharma	Chitkara University, Punjab
	Dr. Abinash Singh	Chitkara University, Punjab
Advisory Committee	Prof. Atul Sharma	IIT Bombay
	Prof. D. K. Dwivedi	IIT Roorkee
	Prof. Inderdeep Singh	IIT Roorkee
	Prof. Harpreet Singh	IIT Ropar
	Prof. Rahul Chhibber	IIT Jodhpur
	Prof. B. S. Pabla	NITTTR, Chandigarh
	Prof. S. S. Dhami	NITTTR, Chandigarh
	Prof. S. S. Banwait	NITTTR, Chandigarh
	Prof. Rupinder Singh	NITTTR, Chandigarh
	Prof. Anoop Kumar	NIT Hamirpur
	Prof. Y. P. Verma	Panjab University, Chandigarh
	Prof. Chander Prakash	LPU, Jalandhar
	Dr. Jaswinder Singh Saini	Thapar University, Patiala
	Dr. Gurjot Singh Dhaliwal	Intertribal Research and Resource Center, UTTC, Bismark, ND, USA
	Dr. C. S. Jawalkar	PEC, Chandigarh
	Mrs. Medha S. Jambhale	ARAI Academy, FMCE, Pune
	Mr. Narinder Singh Jassal	CSIO, Chandigarh
	Dr. Sougata Roy	University of North Dakota, USA
	Dr. Abdulaziz Abutunis	University of Minnesota Duluth, USA
	Dr. Ram Hona	United Tribes Technical College, Bismark, ND, USA
Dr. Mandy Guinn	United Tribes Technical College, Bismark, ND, USA	
Dr. Venkata Gireesh K Menta	University of Minnesota, Duluth, MN, USA	
Dr. Ewumbua Monono	North Dakota State University, Fargo, ND, USA	

	Dr. Mokhtar Fal	King Abdulaziz City for Science and Technology, Riyadh, Saudi Arabia
	Dr. Manu Sharma	UIET, Chandigarh
	Dr. Rajeev Kumar Dang	Panjab University, Chandigarh
	Dr. Abhishek Chauhan	Panjab University, Chandigarh
	Dr. Neha Khatri	CSIR-CSIO, Chandigarh
	Dr. S A Patil	ARAI Academy, FID Chakan, Pune
	Dr. Mohammad Rafiq B Agrewale	ARAI Academy, FID Chakan, Pune
	Dr. Vanraj	Plant Head, Labrose Ayurveda Private Limited, Karnal, Haryana
	Mr. Manpreet Singh	H.S. Industries, Mohali, Punjab
	Mr. Saurabh Sharma	SML Isuzu, Ropar, Punjab
Publication Chair	Dr. Abhineet Saini	Associate Professor, Department of Mechanical Engineering, Applied Engineering, CUIET
	Dr. Ankit Sharma	Assistant Professor, Department of Mechanical Engineering, Applied Engineering, CUIET

### Keynote Speakers:

S.No.	Name	Designation and Organization
1.	Dr. Gurjot Singh Dhaliwal	Director, Intertribal Research and Resource Center, UTTC, Bismark, ND, USA
2.	Dr. Mandeep Dhanda	Assistant Professor, Department of Production Engineering, Punjab Engineering College (Deemed to be University), Chandigarh
3.	Dr. Kaja Antlejš	Senior Lecturer, Industrial Design, School of Engineering, Geelong Waurm Ponds Campus, Deakin University, Australia

**Market of Polyurethane**

- Polyurethanes are one of the most widely used polymeric materials

Category	Percentage
Rigid Foam (Construction, insulation)	25%
Flexible Foam (Electronics, Car seats)	15%
Molded Foam (Automotive, Furniture)	15%
Others (Shoes, Fibers)	10%
Coatings	5%
Adhesives and Sealants	5%

Source: www.essentialchemicalindustry.org/polyurethanes

**Picture 3: Keynote session by Dr. Gurjot Singh Dhaliwal, Director, Intertribal Research and Resource Center, UTTC, Bismark, ND, USA**



**Picture 4: Keynote session by Dr. Kaja Antle, Senior Lecturer, Industrial Design, School of Engineering, Geelong Waurn Ponds Campus, Deakin University, Australia**

**Track Incharges:**

S.No.	Name	Organization	Track
1.	Dr. Kulwinder Singh	Chitkara University, Punjab	Engineering Materials and Manufacturing Technology
2.	Dr. Rajesh Kumar	Chitkara University, Punjab	Fluids, Thermal and Automotive Engineering
3.	Dr. Sunil Kumar	Chitkara University, Punjab	Industrial Design and Engineering
4.	Dr. Sonu Sharma	Chitkara University, Punjab	Multi-Disciplinary Engineering
5.	Dr. Talvinder Singh	Chitkara University, Punjab	Engineering Materials and Manufacturing Technology
6.	Dr. Mukeshwar Yadav	Chitkara University, Punjab	Multi-Disciplinary Engineering

**Session Chairs:**

S.No.	Name	Organization
1.	Dr. Anoop Kumar Singh	Chitkara University, Punjab
2.	Dr. Ankit Sharma	Chitkara University, Punjab
3.	Dr. Rakesh Goyal	Chitkara University, Punjab
4.	Dr. Poonam Saini	Punjab Engineering College (Deemed to be University), Chandigarh
5.	Dr. Santosh K Saraswat	Sardar Swaran Singh National Institute of Bio-Energy, Jalandhar
6.	Dr. Vanraj	Labrose Pvt. Ltd., Karnal, Haryana
7.	Dr. Amanpreet Kaur	Chitkara University, Punjab
8.	Dr. Ankit Bansal	Chitkara University, Punjab
9.	Dr. Vikas Sharma	Gulzar Group of Institutions, Ludhiana, Punjab
10.	Dr. Jasminder Kaur Sandhu	Chandigarh University, Gharuan
11.	Dr. Deepam Goyal	Chitkara University, Punjab
12.	Dr. Kiranjeet Kaur	Chitkara University, Punjab
13.	Dr. Navita Gupta	Chitkara University, Punjab

## **Theme/ Track Areas:**

### **1. Engineering Materials**

- Biomaterials and its processing
- Biomedical devices
- Biopolymers
- Biosensors
- Biodegradable Materials
- Bio-inks for Organs and Tissues
- Commercial Wastes as Alternative Materials
- Composite Materials
- Functionally graded composites
- Mechanical and Biological Behaviour
- Polymers and Ceramics
- Smart Materials
- Sustainable Construction Materials

### **2. Surface Engineering/ Treatment**

- Biomimetic coatings
- Bioinspired Engineering
- Conventional deposition techniques
- Cryogenics for post processing
- Glass coatings
- Nano and Micro level coatings
- Peptide Coatings

### **3. Machine Design**

- CAD/CAE/FEM/ Modelling and Simulation
- Fatigue, Fracture and Failure Analysis
- Multi-body Dynamics
- Mechatronics
- Rotor Dynamics
- Vibrations/ Condition Monitoring



#### 4. **Manufacturing Technology**

- Additive Manufacturing/ Rapid Prototyping
- 3D printing in Automobile, Biomedical and Pharmaceutical industry
- Bio-printing
- 4D/ 5D Printing
- 3D printing of composite materials
- Advanced Manufacturing Processes
- Advances in Welding/ Casting/ Forming Processes
- Artificial Intelligence in Production
- Conventional/ Non-conventional Machining
- Flexible Manufacturing systems
- Green Manufacturing
- Intelligent Manufacturing Micro and Nano Manufacturing
- Nano and Micro Electromechanical Systems
- Sustainable Manufacturing
- Ultra-precision Machining

#### 5. **Industrial Engineering**

- Industry 4.0 and 5.0 in Production
- Automation and Robotics
- Facilities planning and management
- Green technology and productivity
- Industrial Applications of Robotics
- Lean Manufacturing
- Optimization of Manufacturing processes
- Project Management
- Reliability & Maintenance Engineering
- Supply Chain Management
- Work Design and Ergonomics

#### 6. **Fluids and Thermal Engineering**

- Boiler Design

- Fluid Mechanics/CFD
- Combustion and IC Engines
- Renewable Sources of Energy
- Solar Heating
- Thermal Systems Simulation
- Thermal Hydraulics of Nuclear Systems

## 7. **Automotive Engineering**

- Alternative Fuels
- Automobile Manufacturing
- Combustion and Pollution
- Hybrid Vehicle Technology
- Industrial Application of Cleaner Production
- Photovoltaic, Fuel cells and Solar Cells
- Navigation and Sensor systems
- Vehicle Dynamics

## 8. **Multi-Disciplinary Engineering**

- Artificial Intelligence
- Artificial Neural Networks & Deep learning
- Augmented reality and virtual reality
- Big Data and Analytics
- Computer graphics
- Decision Support Systems
- Economy and Cost Analysis
- Healthcare Operations Management
- Information Management Communication Systems
- Machine learning
- Smart Cities and Factories

### **Publication Partners:**



1. Advances in Sustainable and Integrative Manufacturing Technologies Series
2. Modern Hybrid Machining and Super Finishing Processes: Technology and Applications

### **Summary:**

The 6<sup>th</sup> International Conference on Advances in Materials and Manufacturing Technology (AMMT-2022) turned out to be a huge success. More than 100 papers were presented and are on the verge of publication in Scopus indexed journals and as book chapters. The articles followed a minimum of 02 review process for selection and further publication. The participants gave a positive feedback of the conference and best papers from each track was selected for the best paper award. The Department of Mechanical Engineering look forward to conduct the conference under the same name and theme each year to bring a common platform for researchers, faculty members and industry personnel globally, and subsequently result in good publications as an outcome of the conference to boost the research stature at Department and University level.

### **Acknowledgements:**

The organizing team of the conference is grateful to the management of Chitkara University, especially to Dr. Madhu Chitkara, Pro-Chancellor, Chitkara University, Punjab and Dr. Archana Mantri, Vice-Chancellor, Chitkara University, Punjab. The team is obliged to the IT team, branding team and ERP team for their support throughout the conference. Moreover, sincere gratitude is expressed to the track incharges, session chairs and reviewing team for their efforts to make the conference a success. Furthermore, the organizing team is thankful to the keynote speakers who took out time from their busy schedule to lecture the audience.