

Conference

E-SOUVENIR



IC4M 2025

5TH INTERNATIONAL CONFERENCE

ON

Advances in Materials, Mechanics, Mechatronics and Manufacturing

27-28 December 2025 **INDIA**

Organized By



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Our Associates



CRC Press
Taylor & Francis Group

<http://ic4m.in>



ABOUT *Conference*

IC4M 2025 – International Conference on **Advances in Materials, Mechanics, Mechatronics and Manufacturing** is a peer-reviewed international academic conference scheduled to be held on **December 27 & 28, 2025**. The conference is organized by ShriRam College of Engineering and Management (SRCCEM), Banmore, in association with Birmingham City University (UK) and other national and international academic and industry collaborators.

IC4M 2025 aims to bring together researchers, academicians, industry professionals, and practitioners from across the globe to share, discuss, and disseminate recent advances and innovative research in the four core engineering domains—Materials, Mechanics, Mechatronics, and Manufacturing. The conference serves as a multidisciplinary platform emphasizing the interlinking of the four ‘M’s’ in addressing present and future technological challenges.

In the context of rapid technological evolution, IC4M 2025 places special emphasis on Industry 5.0, highlighting the synergy between human-centric manufacturing, advanced automation, artificial intelligence, robotics, smart materials, and sustainable engineering practices. The conference will explore how Industry 5.0 complements Industry 4.0 by focusing on resilience, sustainability, and human–machine collaboration.

The conference program will include keynote lectures, invited talks, technical paper presentations, and interactive sessions delivered by eminent experts and researchers of international repute. Special attention is given to young researchers, doctoral scholars, and early-career professionals, providing them a platform to present their work, gain expert feedback, and engage in scholarly discussions.

IC4M 2025 aspires to go beyond a conventional academic conference by fostering industry–academia collaboration, promoting high-quality research partnerships, and enabling long-term international cooperation. The conference is envisioned as a global networking forum for technocrats, contributing to impactful research outcomes and future-ready engineering solutions aligned with the principles of Industry 5.0 and sustainable development.



BIRMINGHAM CITY
University, UK



Professor David Mba
Vice-Chancellor
Birmingham City University, UK

MESSAGE FROM THE VICE-CHANCELLOR

As Vice-Chancellor of BCU, I would like to extend my best wishes to all at the **IC4M International 2025** Conference on **Advances in Materials, Mechanics, Mechatronics and Manufacturing**.

BCU is proud to contribute to this important conference, one which aligns with our University's mission to create and share knowledge for a better and more inclusive society.

Our longstanding connection with India continues to grow, and our support for this conference reflects our ongoing commitment to the UK-India living bridge.

I wish the 2025 IC4M International Conference all the very best for a successful launch.

Professor David Mba



MESSAGE FROM THE PRESIDENT



Prof. Vinay Kumar Pathak

President

Association of Indian Universities, & VC CSJM
University, Kanpur, IN

It gives me immense pleasure to extend my warm greetings and congratulations to all the distinguished organizers, academic partners, industrial collaborators, and participants of the **5th International Conference on Advances in Materials, Mechanics, Mechatronics, and Manufacturing (IC4M 2025)**, scheduled to be held on **December 27–28, 2025**.

In an era characterized by rapid technological evolution and interdisciplinary convergence, IC4M 2025 stands as a commendable initiative that embodies the spirit of innovation, collaboration, and knowledge-driven progress. The chosen themes—materials, mechanics, mechatronics, and manufacturing—form the core pillars of modern engineering and industrial transformation. By bringing together researchers, academicians, industry professionals, and emerging scholars from diverse geographies, the conference is poised to foster meaningful dialogue, facilitate exchange of frontier ideas, and catalyze the development of cutting-edge solutions that address both contemporary challenges and future aspirations.

The collaboration with globally recognized institutions and associations—including Birmingham City University (UK), the Maharajpura Industrial Association, the Additive Manufacturing Society of India, and The Institution of

Engineers (India, Gwalior Chapter—exemplifies a shared commitment to academic excellence, industrial relevance, and international integration. This partnership model not only enhances the depth and breadth of the conference but also sets a benchmark for sustainable, inclusive, and globally engaged research ecosystems.

I am confident that the scholarly contributions, technical deliberations, and networking opportunities facilitated by IC4M 2025 will significantly enrich the participants' intellectual horizons while laying the groundwork for future interdisciplinary research and innovation. It is heartening to witness such initiatives that bridge academia and industry, strengthen global partnerships, and align with national goals such as Atmanirbhar Bharat and Make in India.

I extend my sincere appreciation to the organizing committee, collaborators, reviewers, and volunteers whose untiring efforts and visionary leadership have made this conference a reality.

I wish IC4M 2025 grand success and hope it inspires a new generation of innovators, scholars, and changemakers.

With best wishes
Prof. Vinay Kumar Pathak



DEV SANSKRITI VISHWAVIDYALAYA

MESSAGE FROM THE PRO VICE-CHANCELLOR



Dr. Chinmay Pandya

(MBBS, PGDipl, MRCPsyche – London)
Pro Vice-Chancellor, Dev Sanskriti
Vishwavidyalaya, Haridwar, IN

It brings me immense joy to learn about the organization of the **5th International - Conference on Advances in Materials, Mechanics, Mechatronics, and Manufacturing (IC4M 2025)**, to be held on **December 27-28, 2025**. The convergence of academic minds, researchers, and practitioners from diverse fields under this initiative is truly commendable.

In an era where technology is rapidly reshaping human experience, it is essential that innovation is not only pursued with scientific rigour but also guided by a sense of purpose, ethics, and responsibility. Conferences like IC4M provide a vital platform for sharing transformative ideas, encouraging collaboration, and shaping a future rooted in sustainability, creativity, and compassion.

I extend my heartfelt appreciation to the organizing institutions including ShriRam College of Engineering and Management Gwalior, Yajurvedam, Gayatri Auto Industries, and all national and international collaborators for their tireless efforts in bringing together such a meaningful event. The association with leading global institutions and publication partners further reflects the academic integrity and international scope of this conference.

May IC4M 2025 serve as a beacon of knowledge, innovation, and holistic development. I convey my best wishes for the grand success of the event and the continued advancement of all its participants and contributors.

With divine blessings

Dr. Chinmay Pandya



MESSAGE FROM THE PRESIDENT



Dr. Pratapsinh K. Desai

President

Indian Society for Technical Education, IN

I am glad to learn that the **5th International Conference on Advances in Materials, mechanics, Mechatronics, and Manufacturing (IC4M 2025)** is being organized by ShriRam College of Engineering and Management, Gwalior on **December 27-28, 2025** and publishing the Souvenir on this occasion. Such conferences play a vital role in fostering innovation, promoting interdisciplinary research, and facilitating collaboration among researchers, academicians, and industry professionals from across the globe. The publication of a Souvenir further enriches this endeavor by capturing the essence of the event and serving as a lasting record of the contributions made by the participants.

I extend my best wishes to the organizers, contributors, and attendees for the grand success of IC4M 2025 and for fruitful discussions that inspire future advancements in the fields of materials, mechanics, mechatronics, and manufacturing.

Dr. Pratapsinh K. Desai



MESSAGE FROM THE PRESIDENT



Dr. L. Jyothish Kumar
President
Additive Manufacturing Society of India

It gives me immense pleasure to extend my warmest greetings and best wishes to the organizers and participants of the International Conference on **Advances in Materials, Mechanics, Mechatronics and Manufacturing (IC4M 2025)**, being held online during **December 27–28, 2025**.

In an era where innovation defines progress, this conference presents a timely platform for scholars, researchers, and industry professionals to converge and share transformative ideas across disciplines that are shaping the future of engineering and technology. The synergy of materials science, advanced manufacturing, mechatronics, and computational mechanics is crucial to unlocking new possibilities, especially in the domain of Additive Manufacturing—an area that continues to revolutionize how we design, develop, and deliver solutions.

I sincerely commend ShriRam College of Engineering and Management Gwalior, Yajurvedam, along with their international and national collaborators, for curating such a multidisciplinary academic initiative and for their commendable efforts in fostering global collaboration and knowledge sharing. Conferences like IC4M not only bridge the gap between research and real-world applications but also inspire young minds to pursue excellence in science and engineering.

On behalf of the Additive Manufacturing Society of India, I wish IC4M 2025 grand success and a valuable experience for all attendees. May this event lead to meaningful partnerships and pave the way for innovative contributions to the academic and industrial communities.

With warm regards

A handwritten signature in black ink, appearing to read "Jyothish Kumar".

Dr. L. Jyothish Kumar



ESTD. 1998



Shri Jitendra Sharma

Hon'ble Vice-Chairman

ShriRam Group of Colleges (1998), Gwalior, IN

MESSAGE FROM THE VICE-CHAIRMAN

I am pleased to extend my greetings on the occasion of the **5th International Conference on Advances in Materials, Mechanics, Mechatronics & Manufacturing (IC4M 2025)** scheduled on **December 27 & 28, 2025**.

At a time when engineering and manufacturing systems are rapidly evolving towards smart, sustainable, and human-centric paradigms, platforms like IC4M 2025 are essential for bringing together ideas, innovations, and expertise from academia and industry. The conference reflects a strong commitment to advancing knowledge and encouraging collaborative research across disciplines.

I appreciate the efforts of the organizers, partners, and advisory members in conceptualizing and executing this important academic initiative. I also acknowledge the valuable contributions of the speakers, researchers, and participants who form the core of this conference.

I wish IC4M 2025 great success and hope it contributes meaningfully to future engineering advancements and global research collaboration.

With best wishes

Shri Jitendra Sharma

MESSAGE FROM THE CONFERENCE CHAIR



Dr. Ravi K Dwivedi

Professor

Maulana Azad National Institute of Technology
Madhya Pradesh, IN

It gives me immense pleasure to extend my warm greetings to all participants, speakers, organizers, and collaborators of the **5th International Conference on Advances in Materials, Mechanics, Mechatronics & Manufacturing (IC4M 2025)**. This international platform brings together distinguished researchers, academicians, scientists, and industry professionals to share insights, research outcomes, and technological innovations in these rapidly evolving domains.

The convergence of Materials, Mechanics, Mechatronics, and Manufacturing defines the foundation of next-generation engineering. Conferences like IC4M play a crucial role by fostering interdisciplinary thinking, encouraging collaborative research, and bridging the gap between academia and industry. Such academic endeavors significantly contribute to national research capacity, innovation ecosystems, and our collective march toward technological self-reliance.

I commend the organizers for their commitment to maintaining academic rigor and global relevance through peer-reviewed publications, distinguished keynote addresses, and active participation from reputed institutions. I also appreciate the authors whose contributions enrich the technical discourse and add to the body of knowledge.

I hope that IC4M 2025 leads to productive networking, meaningful collaborations, and actionable research directions that benefit society and industry in the years ahead.

I wish the organizers and participants great success and look forward to the impactful outcomes of the conference.

With best wishes

Dr. Ravi K Dwivedi

ESTD. 1998



Dr. Premanand S Chauhan

Director General

ShriRam Group of Colleges (1998), Gwalior, IN

MESSAGE FROM THE CONFERENCE CO-CHAIR

It is a matter of great pleasure that we are organizing the **5th International Conference on Advances in Materials, Mechanics, Mechatronics & Manufacturing (IC4M 2025)** on **December 27 & 28, 2025**.

In the rapidly evolving era of Industry 4.0 and Industry 5.0, the integration of materials, mechanics, mechatronics, and manufacturing plays a vital role in driving innovation, sustainability, and human-centric engineering solutions. IC4M 2025 aims to provide a global platform for researchers, academicians, industry professionals, and young scholars to share knowledge, present quality research, and deliberate on emerging challenges and opportunities in these domains.

I sincerely acknowledge the dedicated efforts of the advisory committees, organizing team, technical committee members, reviewers, and volunteers, as well as the valuable support of our national and international collaborators, whose contributions have made this conference possible.

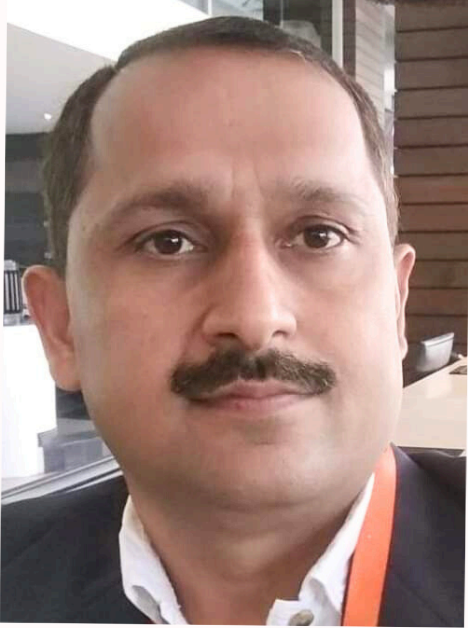
I extend my heartfelt thanks to the keynote speakers, authors, and participants for their valuable contributions. I am confident that IC4M 2025 will foster meaningful academic exchange, strengthen industry-academia collaboration, and contribute to future-ready engineering solutions.

I wish IC4M 2025 every success

With sincere best wishes

Dr. Premanand S Chauhan

MESSAGE FROM THE COORDINATOR



Dr. Avadesh K Sharma

Associate Professor
Rajkiya Engineering College, Mainpuri, IN

It is a privilege to be associated with the **5th International Conference on Advances in Materials, Mechanics, Mechatronics & Manufacturing (IC4M 2025)** being held on **December 27 & 28, 2025**.

Engineering research today demands not only depth in individual domains but also meaningful integration across disciplines. IC4M 2025 addresses this need by offering a common platform where ideas related to advanced materials, intelligent systems, precision mechanics, and modern manufacturing practices converge. Such academic forums are essential for nurturing innovation, encouraging problem-oriented research, and translating knowledge into practical solutions.

I commend the vision and efforts of the organizing institutions and committees for curating a conference that promotes scholarly excellence and global collaboration. I also acknowledge the valuable contributions of researchers, speakers, and participants whose work forms the foundation of this conference.

I am confident that the deliberations at IC4M 2025 will stimulate new perspectives, collaborations, and research directions, contributing positively to the advancement of engineering and technology.

With sincere best wishes

A handwritten signature in black ink, appearing to read 'Dr. Avadesh K Sharma'.

Dr. Avadesh K Sharma

MESSAGE FROM THE ORGANIZING SECRETARY



Dr. Anupma Agarwal

Associate Professor
PIET, Parul university, Vadodara, IN

It is my pleasure to extend warm greetings to all participants, researchers, academicians, and industry professionals gathered for the **5th International Conference on Advances in Materials, Mechanics, Mechatronics & Manufacturing (IC4M 2025)**, scheduled on **December 27 & 28, 2025**.

In an era marked by swift technological progress and evolving engineering paradigms, this conference offers a distinguished platform to share innovative research, exchange ideas, and foster collaborative solutions in the core areas of materials science, mechanics, mechatronics, and manufacturing systems. The focus on emerging trends, coupled with the synergy of academic and industrial insights, makes this event both timely and impactful.

I congratulate the organizers, collaborators, advisory members, and volunteers for their commendable efforts in bringing together a high-quality academic program. I also extend my appreciation to all contributors, keynote speakers, and delegates for their valuable engagement.

May IC4M 2025 lead to meaningful deliberations, fruitful collaborations, and advancements that shape the future of engineering and technology.

With best wishes

A handwritten signature in blue ink, appearing to read 'Anupma', written over a horizontal line.

Dr. Anupma Agarwal



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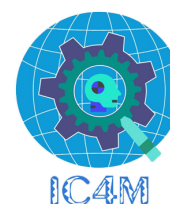
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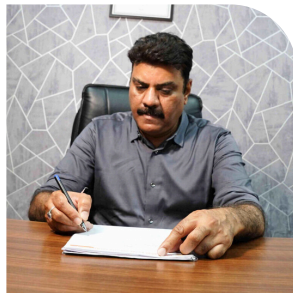
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Co-Coordinator



Dr. Anupma Agarwal
Associate Professor
PIET, Parul university, Vadodara, IN
Organizing Secretary



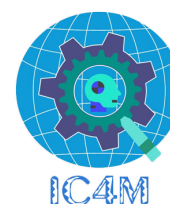
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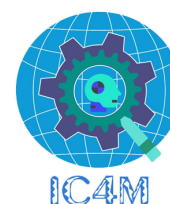
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Inaugural Ceremony



Dr. V. K. Jain

Professor (Retired)
Indian Institute of Technology Kanpur, IN
Chief Guest



Dr. Amit Ganatra

Director (Dean), Research & Development and
Dean, Faculty of Engineering & Technology
Charutar Vidya Mandal University, Anand, IN
Guest of Honor



Dr. T B Sridharan,

Pro-Vice Chancellor
Vellore Institute of Technology (VIT) Bhopal, IN
Guest of Honor



Keynote Speakers



Dr. Gagandeep Singh

Senior Publisher (STEM) | CRC Press | India and Sub-Saharan Africa
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Dr. Elammaran Jayamani

Associate Professor
Faculty of Engineering, Computing, and
Science (Mechanical Engineering Program),
Swinburne University of Technology,
Malaysia



Dr. Arivazhagan (Ari) Anbalagan

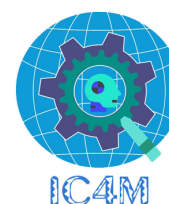
Assistant Professor (Research) Centre for Manufacturing and Materials
Coventry University, United Kingdom



Program Schedule

Day 1 (December 27, 2025)

02:00 PM- 03:00 PM	Keynote Address 1
Topic of the Keynote	Emerging role of AI in STEM Publishing
Keynote Speaker	Dr. Gagandeep Singh Senior Publisher (STEM) CRC Press India and Sub-Saharan Africa Taylor & Francis India Pvt. Ltd.
<p>Biography of Speaker: Dr. Gagandeep Singh is currently working as a Senior Publisher in STEM at CRC Press, Taylor & Francis Group, India. He has been associated with the organization for more than fifteen years. During this period, he has facilitated the publication of over 500 books across various domains and has acquired more than 1,000 book projects. He also leads an editorial team focusing on Mathematics, Statistics, Chemical Sciences, Plant and Life Sciences, and Medicine in India and the Sub-Saharan Africa region.</p> <p>Dr. Singh holds a PhD in Forensic Chemistry and a Master's degree in Forensic Science. He has published 25 research papers in peer-reviewed international journals and holds one patent. He is also a recipient of the National Award for Commercializable Patents (2013–14) by TIFAC, Department of Science and Technology, Government of India, under the Technology Refinement and Marketing Programme (TREMAP) for his patented innovation.</p>	



Program Schedule

Day 1 (December 27, 2025)

04:30 AM- 05:30 PM	Keynote Address 2
Topic of the Keynote	Digital Twins and Generative AI in Manufacturing and Materials: Accelerating the Path to Net Zero
Keynote Speaker	Dr. Arivazhagan (Ari) Anbalagan Assistant Professor (Research), Centre for Manufacturing and Materials Coventry University, United Kingdom

Biography of Speaker: Dr. Arivazhagan Anbalagan is an Assistant Professor in Digital Manufacturing at the Centre for Manufacturing and Materials, The Institute for Advanced Manufacturing and Engineering (AME), Coventry University, UK. He has a strong research background in manufacturing, and prior to joining Coventry University, Dr. Arivazhagan held various academic and postdoctoral positions across leading UK universities. His work focuses on implementing Manufacturing, Machining, CAD/CAM, CAPP, and automation technologies, as well as Industry 4.0 and Digital Twin solutions for industrial applications, contributing significantly to cost and lead-time reduction through academia–industry collaboration.

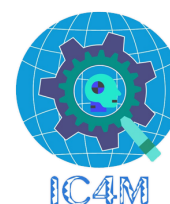
His previous academic appointments include:

- Robert Gordon University (2020–2021)
- University of Birmingham (2017–2020)
- Queen’s University Belfast (2015–2017)
- Nottingham Trent University (2014–2015) Coventry University (2013–2014)

With more than 15 years of experience, he possesses commendable hands-on expertise in hardware, software, and ICT technologies.

His skill set includes:

- Operation of CNC machines (Siemens, Heidenhain, Fanuc)
- Use of metrological equipment such as CMM (Carl Zeiss), Alicona 3D optical measurement systems, microscopes, SEM, etc.
- Extensive experience with CAD/CAM/CAPP tools (NX, SolidWorks, AutoCAD, Vericut, etc.) and software development using C, C++, Java, C#.NET, and Python.



Program Schedule

Day 2 (December 28, 2025)

09:30 AM- 10:30 AM	Keynote Address 3
Topic of the Keynote	Sustainable Materials and Manufacturing Technologies
Keynote Speaker	<p>Dr. Elammaran Jayamani Associate Professor (Teaching) in Faculty of Engineering, Computing, and Science (Mechanical Engineering Program), Swinburne University of Technology, Malaysia</p>
<p>Biography of Speaker: Dr. Elammaran Jayamani joined Swinburne University of Technology, Sarawak Campus (SUTS), in 2007. He is an Associate Professor in the Mechanical Engineering program at the Faculty of Engineering, Computing, and Science. A creative educator with over 23 years of experience, he actively promotes research and development in sustainable materials. He holds a PhD in Mechanical Engineering, specializing in Materials and Processes, and possesses expertise in learning and teaching, research and scholarship, as well as academic leadership and service. He is well-versed in training and mentoring students, research scholars, and educators. Dr. Elammaran has also completed a Graduate Certificate in Learning and Teaching (Higher Education) at Swinburne University of Technology, Melbourne, Australia.</p> <p>He is a Member of the Institution of Mechanical Engineers (IMechE), UK, and a Chartered Engineer (CEng) – MIMechE (UK), as well as an International Professional Engineer (IntPE), UK. His primary research interests include:</p> <ul style="list-style-type: none"> • Polymer matrix composite materials • Energy and environmental sustainability • Learning and teaching methodologies 	



Editors of Conference Proceedings



Dr. Ravi K Dwivedi

Professor
Maulana Azad National Institute of
Technology, Bhopal, IN



Dr. Premanand S Chauhan

Director General
ShriRam Group of Colleges (1998), Gwalior,
IN



Dr. Elammaran Jayamani

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