

## Preface

The International Conference on Design, Materials and Metaheuristic Algorithms for Engineering (ICDMME 2024) paved the way to understanding the latest technological and innovative advancements in the fields of optimization, design and materials engineering. The conference developed solutions to physical problems, questions on how things work in optimization, design and materials engineering, and how to make them work better in new and different ways. ICDMME 2024 aimed to enhance understanding of the recent trends in design and materials engineering, including optimization and innovation, and to improve research culture among the academicians for exploring the knowledge base and maintaining dynamism in the teaching and learning process.

ICDMME 2024 was organized by the Research and Development Cell, Jai Shriram Engineering College, Tirupur, India, on April 24, 2024. During the meeting, the researchers, academicians, industry specialists and students presented their research findings and benefitted from acquaintance with the latest trends and developments in design, optimization and materials engineering. The conference was conducted in a hybrid mode so that participants could attend the conference platform offline or online via Google Meet. The authors were given 10 minutes for presentation followed by 5 minutes for queries and discussion.

The conference featured two keynotes and seven technical sessions. Prof. Ir. Dr. Yusri Bin Yusof, Professor, Department of Manufacturing & Industrial Engineering, Universiti Tun Hussein Onn Malaysia (UTHM), Malaysia, and Dr. R. Mohan, Associate Professor, Department of Computer Science & Engineering, National Institute of Technology, Tiruchirappalli, gave their keynote addresses to the participants and shared their insights with the audience without reservation.

We would like to acknowledge the efforts of all attendees, guests, authors, reviewers and conference committees for their invaluable contribution to this meeting and for bringing this publication to life.

With best Regards,



Dr. R. Thirumalai  
Guest Editor – ICDMME 2024



Dr. R. J. Golden Renjith Nimal  
Convenor – ICDMME 2024

## Profile of the Guest Editors

**Dr. Thirumalai Ramanathan M.E., PhD, MIE**  
**Professor of Mechanical Engineering**  
**Jai Shriram Engineering College, Avinashipalayam, Tirupur**



Dr. Thirumalai R, Principal and Professor of Mechanical Engineering, Jai Shriram Engineering College, Tirupur, Tamil Nadu, India, has extensive teaching, research and administrative experience of 21 years. Dr. Thirumalai R is a proud alumnus of the National Institute of Technology, Trichy, and obtained a Ph.D degree from Anna University, Chennai, India, in 2013. At present, he is working as a Professor at Jai Shriram Engineering College, Tirupur, India. He is recognized as the top 2% Scientist by Stanford University in the year 2022-2023. Dr. Thirumalai R has published more than 90 research articles (more than 40 articles indexed in Scopus/Web of Science) in peer-reviewed journals of international repute and conferences with h-index: 10 and i10-index: 10 (Google Scholar) and Google Scholar Citations: 400+. Dr. Thirumalai R has been awarded with “AWARD OF EXCELLENCE IN RESEARCH” from Novel Research Academy, Puducherry, India, during the academic year 2021-22. He is an active researcher in the areas of hard machining, sustainable machining, composites fabrication and machinability, minimum quantity lubrication, bio-diesel, welding, etc. Dr. Thirumalai R has developed a Research Lab to carry out the manufacturing and machining-related projects in the Department of Mechanical Engineering. He has attended many national and international conferences, presented papers as a keynote speaker, chaired technical sessions and organized conferences/seminars as chairman. He visited several countries such as Thailand, Sri Lanka, Malaysia, etc., to deliver the keynote addresses and chair the international conferences/symposiums. He has supervised 25 B.E / M.E & 06 Ph.D Thesis and awarded 04 Ph.D research scholars. He is the editor for Materials Today proceedings from Elsevier publications and IOP conference proceedings: Journal of Physics. He has received funds Rs 4,10,000/- for organizing various events like Conferences and FDP. He has generated Rs 2,84,600/- as a consultancy amount. He was the recipient of the Outstanding Reviewer award and a letter of appreciation for reviewing from Elsevier Journals. Also, Dr. Thirumalai R has been identified as the reviewer board member with several Elsevier, Springer, Inderscience and SAGE journals.

**Dr. R. J. Golden Renjith Nimal**  
**Associate Professor and Head**  
**Department of Mechanical Engineering,**  
**Jai Shriram Engineering, Avinashipalayam, Tirupur**



Dr. R. J. Golden Renjith Nimal completed his under-graduation in Mechanical Engineering from CSI Institute of Technology, Anna University, and post-graduation in Manufacturing Engineering from National Engineering, Anna University, Chennai. He obtained his doctorate in Mechanical Engineering, specializing in solid state welding, from Anna University. He has more than 15 years of teaching and research experience in various leading institutions. He has guided more than 15 projects for both UG & PG students. He has published more than 41 research papers in leading international and national journals and more than 18 research papers in leading international and national conferences. He won the best faculty award in 2014. He is a member of the peer review committee in various international journals like the International Journal of Industrial and System Engineering, Materials Today and International Journal of Vibration and Control. He has 3 patents granted. He has published 2 textbooks, namely Manufacturing Processes and Metrology. He organized many programs like FDP seminars, conferences, and workshops. He has received funds Rs 3.20,000/- for organizing various events like conferences and FDP. Under his guidance, final year mechanical engineering students developed an “Electrical bike, 3D Printer and Go Kart”. He has given many guest lectures in various FDPs and workshops. He is a life member of IET.

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Dr. R. Thirumalai  
Principal, JSREC & Guest Editor

### 3. Convenor

Dr. R. J. Golden Renjith Nimal  
Associate Prof. & Head / Mechanical, JSREC  
Faculties of JSREC, Tirupur, India.



Dignitaries at ICDMME 2024



Inauguration of ICDMME 2024



Participants at ICDMME 2024