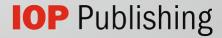
IOP Conference Series Materials Science and Engineering

Second International Conference on Materials Science and Manufacturing Technology 2020 (ICMSMT 2020)

Proceedings of the ICMSMT 2020 - Vol. 1 Coimbatore I Tamil Nadu I India 09 - 10, April 2020 I www.icmsmt.com

Publication Partner



Second International Conference on

Materials Science and Manufacturing Technology 2020 (ICMSMT 2020)

Executive Committee of ICMSMT 2020

Conference Chairs

Dr. Senthilkumar Sundaram, Diligentec Solutions, Coimbatore, India

Dr. Suguna N, Joint Director, Akshaya College of Engineering Technology, India

General Chairs

Dr. Baharudin Bin Ismail, Universiti Malaysia Perlsi, Malaysia

Dr. Jaya J, Principal, Akshaya College of Engineering and Technology, India

Editor

Dr. Ramya Muthusamy, Diligentec Solutions, Coimbatore, India

Members

Dr. Sivakumar R, Akshaya College of Engineering and Technology, India

Dr. Sendhil Kumar S, Akshaya College of Engineering and Technology, India

Dr. Anithasree A, Akshaya College of Engineering and Technology, India

Dr. Rajkumar N, Akshaya College of Engineering and Technology, India

Dr. Viji C, Akshaya College of Engineering and Technology, India

Information Contact

Dr. Kapilan S, Akshaya College of Engineering and Technology, India

Technical Program Committee Chairs

Dr. Joseph Xavier R, Advisor, Akshaya College of Engineering and Technology, India

Dr. Sabareesaan K J, Mechanical and Industrial Section, Nizwa College of Technology, Oman

Dr. Moorthi, S R Engineering College, Warangal, India

Dr. Rajamani R, PSG College of Technology, Coimbatore, India

Technical Program Committee

Dr. Jaroslaw Drelich, Michigan Technological University, USA

Dr. Chong Wen Tong, University of Malaya, Malaysia

Dr. Mohamed Arezki Mellal, M'Hamed Bougara University, Algeria

Dr. Khairel Rafezi Ahmad, University Malaysia Perlis, Malaysia

Dr. Mahanthi S D, Michigan State University, USA

Dr. Mohammed Henini, University of Nottingham, UK

Dr. Sharifah Shahnaz Syed Bakar, University Malaysia Perlis, Malaysia

Dr. Alexandru Bogdan Andreescu, Transilvania University of Brasov, Romania

Dr. Norinsan Kamil Othman, University Science Malaysia, Malaysia

Dr. Mitsuru Itoh, Tokiyo Institute of Technology, Japan

Dr. Sanjeev Kumar, Aalborg University, Denmark

Dr. Ramani Kannan, University Technology Petronas, Malaysia

Dr. Satyabrata Das, Indian Institute of Technology, Kanpur

Dr. Singh S P, Indian Institute of Technology, Delhi

Dr. Rajiv O. Dusane, Indian Institute of Technology, Bombay

Dr. Kamal K Kar, Indian Institute of Technology, Kanpur

Dr. Ashish Kumar Mishra, Indian Institute of Technology, Varanasi

Dr. Anand K, Indian Institute of Technology Madras, India

Dr. Sushil Mishra, Indian Institute of Technology, Bombay

Dr. Ajit Panigrahi, CSIR-Institute of Minerals and Materials Tech, Bhubaneswar

Dr. Somnath Bhowmick, Indian Institute of Technology, Kanpur

Dr. Patil P, Indian Institute of Technology, Varanasi

Dr. Amrita Bhattacharya, Indian Institute of Technology, Bombay

Dr. Akhilesh Kumar Singh, Indian Institute of Technology, Varanasi

Organizing Chairs

Dr. Palanikumar S, Diligentec Solutions, Coimbatore, India

Dr. Kathiravan N, Dean, Akshaya College of Engineering and Technology, India

Guest Editor

Dr. Amjad Anvari-Moghaddam, Aalborg University, Denmark

Review Committee Chair

Dr. Markas Law Lee Lam, National University of Singapore, Singapore

Information Contact

Dr. Kapilan S, Akshaya College of Engineering and Technology, India

Publicity and Promotions

Mr. Sivakumar K, Diligentec Solutions, Coimbatore

Dr. Krishnakant, Indian Institute of Technology, Delhi

Dr. Alankar Alankar, Indian Institute of Technology, Bombay

Dr. Vanitha C, National Institute of Technology, Warangal

Dr. Tanmoy Maiti, Indian Institute of Technology, Kanpur

Dr. Jitendra Kumar, Indian Institute of Technology, Varanasi

Dr. Rer. Nat. Ravikumar, Indian Institute of Technology, Madras

Dr. Bikash Kumar, CSIR-IMMT, Bhubaneswar

Dr. Ramkumar J, Indian Institute of Technology, Kanpur

Dr. Jyoti Prasad Borah, National Institute of Technology, Nagaland

Dr. Chandana Rath, Indian Institute of Technology, Varanasi

Dr. Mani V N, C-MET, DIETY, Government of India, India

Dr. Bimal Prasad Singh, CSIR-IMMT, Bhubaneswar

Dr. Vivek Verma, Indian Institute of Technology, Kanpur

Dr. Parag Tandaiya, Indian Institute of Technology, Bombay

Dr. Honey John, Cochin University of Science and Technology, Cochin

Dr. Manas K Dalai, CSIR-IMMT, Bhubaneswar

Dr. Nagaraja S, Akshaya College of Engineering Technology, India

Dr. Mathan Kumar N, Akshaya College of Engineering and Technology, India

Prof. Selvaraju M, Akshaya College of Engineering and Technology, India

Dr. Barkunan S R, Akshaya College of Engineering and Technology, India

Dr. Balamurugan, Amrita School of Engineering, Coimbatore, India

Dr. Josephine R L, National Institute of Technology Trichy (NITT), India

Dr. Kulkarni S M, National Institute of Technology (NITK), Surathkal, India

Dr. Gururaj Punekar, National Institute of Technology (NITK), Surathkal, India











MS 3014	Digital picture watermarking technique for security applications B Swapna, M Kamalahasan, S Srinidhi, S Sowmiya, S Vasanth and P Sri Divyabharathi	0001
MS 3017	Corrosion inhibition performance of celery, pomegranate and green tea extracts on mild steel in dilute sulphuric acid Roland T. Loto, Cleophas Loto and Fope Oyedeko	0007
MS 3018	Corrosion resistance study of UNS A93105 aluminum alloy in neutral chloride and acid chloride solution Roland T. Loto and Cleophas Loto	0011
MS 3020	Design and execution of smart agro device using IoT B Swapna, N S Shubhashree, M Kamalahasan, H Hemasundari and Preetha Mary George	0015
MS 3023	Synthesis, characterization and impedance studies of novel hybrid nano composites of gadolinium titanate nano composites Vinayak Adimule, Anusha Suryavanshi and Santosh Nandi	0021
MS 3027	Characteristics of ZrB ₂ -ZrO ₂ -MoSi ₂ -Al coating on carbon/carbon composite obtained by a new multi-chamber detonation accelerator <i>M G Kovaleva, I Yu Goncharov, V Yu Novikov, M N Yapryntsev, O N Vagina, I N Pavlenko, V V Sirota, Yu N Tyurin and O V Kolisnichenko</i>	0027
MS 3031	Free vibration analysis of laminated sandwich plates under thermal loading A Garg and H D Chalak	0030
MS 3034	Structural analysis of a food truck subjected to impact loads Édison Argüello, Caterine Donoso, Oscar Arteaga, Kléber Chiluisa, Hernán Morales V., Ronny P. Aguirre, Kevin Perez and Klever D. Morales	0036
MS 3048	Experimental investigation and finite element analysis of Magnesium Alloy (AZ31B) in Micro Electrical Discharge Machining (µEDM) <i>Z. Izzuddin and M. Azuddin</i>	0043
MS 3058	Co-sputtering of Lu ₂ O ₃ , Eu ₂ O ₃ and Ga ₂ O ₃ for optoelectronics applications Pramod Mandal, Udai P Singh and Sudesna Roy	0050
MS 3069	Green composite materials for green technology in the automotive industry Rittin Abraham Kurien, D Philip Selvaraj and M Sekar	0056
MS 3071	Strength and durability performance of Light Weight Self-Compacting Concrete (LWSCC) with Light Expanded Clay Aggregate (LECA) R. Vinoth and M. Vinod Kumar	0063

MS 3075	Dissimilar friction stir welding between AA2024-T3 and copper with threaded tool pin N Kumar and A Bhattacharya
MS 3077	Mixed metal oxide based electrochemical sensing of inhibitory neurotransmitter serotonin in the presence of dopamine Rajasree G Krishnan, Beena Saraswathyamma, Sreedhar K M, Sofia David, Alisha P. Prakash and Greeshma S
MS 3078	Effect of bacteria subtilis on concrete substituted partially and fully with copper slag <i>I Rohini and R Padmapriya</i>
MS 3080	Evaluation of the mechanical properties of glass / epoxy composite by embedding shape memory alloy and nanoclay Niranjan Pattar, S F Patil, Pratik Patil, Iranna Anikivi and Shridhar Hiremath
MS 3088	Strength studies on geopolymer concrete with GGBS and Fly ash Ganesan Nagalingam and Ramesh Babu Chokkalingam
MS 3095	A short review on jute fiber reinforced composites Prashant B. Shelar and U. Narendra Kumar
MS 4002	Investigation of deviation in width of embossed micro-structure by hot embossing S S Deshmukh and A Goswami
MS 4003	Investigation of copper-water loop heat pipe for different filling ratios Atmanand Anikivi, Rudra Naik and K. Rama Narasihma
MS 4012	Simulation and optimization for a plastic component Samhita Pashte, Kiran Wagle, Shailesh Agrawal, D S S Sudhakar, Bhushan Patil and Deepika S Singraur
MS 4015	Investigating the effect of chitosan's degree of deacetylation on size of the nanoparticle <i>Fiona C Rodrigues, Devi N G, KB Koteshwara and Goutam Thakur</i>
MS 4020	Influence of mineral admixtures on impact strength of self-compacting concrete under elevated temperatures Mervin Ealiyas Mathews, N Anand and Nandhagopal M
MS 4021	Dielectric properties of Cr^{3+} doped Al_2O_3 of a hierarchical nanostructure synthesized using a highly porous precursor of tubular $AlO(OH) \cdot \alpha H_2O$ fibers
	S Jangu, S K Sharma, A K Sudhansu and S Ram

MS 4029	Strength and durability properties (effect of salts) of internal curing concrete Kastro Kiran V, Dhanya Sathyan, K B Anand and P Rubitha Devi	0158
MS 4034	Microstructure of concrete containing sandstone cutting waste-a technical report Sanjay Mundra, Vinay Agrawal and Ravindra Nagar	0164
MS 4040	Improved progressive collapse resistance of irregular RC flat slab buildings under different corner column failures Suyash Garg, Vinay Agrawal and Ravindra Nagar	0172
MS 4055	Effect of residual stress on resonant frequency in Nitinol based thin film resonator Ajay Sudhir Bale, Suhaas V Reddy and Subhashish Tiwari	0179
MS 4084	One pot synthesis of amino-ethanethiol derivatives of aromatic aldehydes by the catalytic action of DBU <i>R Rejithamol, S Beena, Midhina Krishnan, Megha T Dharan and Anusree L</i>	0185
MS 4089	Transmission of data, audio and text signal using Li-fi technology G Madhuri, K Anjali and R.Sakthi Prabha	0189
MS 5032	Recycling of lithium ion batteries using fungi based organic acids V Navaneethakrishnan, K Pavithra and V Vanitha	0196
MS 5068	Structural and electrical properties of Dy and Ta co-substituted (Hf, Zr)O ₂ ceramics as a novel high-k dielectric for logic and memory devices Urvashi Sharma, Gulshan Kumar, Sachin Mishra, Dillip Kumar Pradhan and Reji Thomas	0201
MS 5085	Investigations on silver incorporated RF sputtered ZnO thin films Melda Francis, Anu Kuruvilla, P Martin Francis and M Lakshmi	0207
MS 5094	Effect of selenisation on the properties of antimony selenide thin films Anu Kuruvilla, Melda Francis and Lakshmi.M	0214
MS 6014	Investigations on the effect of nozzle angle and air flow rate during nanofluid Minimum Quantity Lubrication milling of Aerospace alloy Al7075-T6 Harshit B. Kulkarni, Pratik P.Khandare, Pranesh G.Parvatikar, Pranil G.Pawar, Rajanikant Tiwari, Mahantesh M. Nadakatti, Anand S. Deshpande and Raviraj M. Kulkarni	0221
MS 6016	Low cost and open source software-based CNC router for machining contours Aniket T Suryawanshi, D S S Sudhakar and Bhushan T Patil	0228
	minor i paryaranan, D b b baananan ana Dhabhan I I an	0440

MS 6029	Energy efficient production of geopolymer bricks using industrial waste Chithambar Ganesh. A., Muthukannan. M., Aakassh. S., Prasad and Subramanaian.B.	02
MS 6031	Structural performance of hybrid fiber geopolymer concrete beams Chithambar Ganesh. A, Muthukannan. M, Dhivya. M., Sangeetha. C.B and S.P. Daffodile	02
MS 6035	A review on training and leadership development: its effectiveness for enhancing employee performance in Indian construction industry <i>Pramod Kumar Misra, Biswajyoti Pani and Jitendra Mohanty</i>	02
MS 6048	Reduced graphene oxide synthesis by dry planetary ball milling technique under hydrogen atmosphere Binod Bihari Palei, Tapan Dash and Susanta Kumar Biswal	02
MS 6075	Testing empirically the impact of inflating diesel prices in WPI and CCI Ajay Kumar Shinghal and Harish Nagar	0.
MS 7012	E-healthcare monitoring using internet of things B Swapna, S Gayathri, M Kamalahasan, H. Hemasundari, M Siraas Ganth and S Ranjith	0.
MS 7036	Analysis of air quality data in the city of Bogotá through clustering techniques Jesús Silva, Liliana Patricia Lozano Ayarza, Julio Cesar Mojica Herazo, Omar Bonerge Pineda Lezama, Hugo Hernández Palma and Carlos Vargas Mercado	0.
MS 7038	Bayesian networks applied to climate conditions inside a naturally ventilated greenhouse Jesús Silva, Liliana Patricia Lozano Ayarza, Julio Cesar Mojica Herazo, Omar Bonerge Pineda Lezama, Hugo Hernández Palma and Carlos Vargas Mercado	0.
MS 3057	Effectivity analysis for poultry feed production using system simulation Faraz Mueen Mulla, Vinayak N Kulkarni, Sanjay V Kulkarni, V.N.Gaitonde and B.B. Kotturshettar	0
MS 4005	Simulation study and analysis of inventory stock taking in manufacturing industry Geetha D, Vinayak N Kulkarni, Sanjay Kulkarni, V.N.Gaitonde and B.B.Kotturshettar	0.
MS 4013	Static & dynamic performance analysis and modal simulations of single point cutting tool Srinath. M. K, M. S. Ganesha Prasad and Rony Nazareth	0
MS 4086	Optimising cutting parameters in boring operation for C45 steel G Jangali Satish, H K Madhusudhana, Bentur H Nishant and B B Kotturshettar	0.

MS 4095	Finite element analysis on effect of different ball spacing in bubble deck lightweight concrete slab M Vinod Kumar and Taha Abou Hamza	032.
MS 4096	A pencil graphite electrode modified with poly nicotinamide as a framework for the electrochemical detection of propranolol hydrochloride A Santhy, S Beena, U S Krishnanunni Namboothiri, S Anupriya and C V Sreeranjini 0	0333
MS 5002	A commercially viable electro chemical sensor for the immunosuppressant drug mycophenolate mofetilutilizing pencil graphite electrode A Santhy, S Beena, G Krishnan Rajasree and S Greeshma	0338
MS 5003	Electrochemical quantification of vitamin B9 on poly tyrosine modified pencil graphite electrode A Santhy, S Beena, Veena S and S Shahina	0345
MS 5048	Experimental study on steel fibre reinforced concrete with a partial replacement of cement by rice husk ash Mukilan K, Irene A.D.K.B, Shenbagavalli S and Muthuprakash P	0350
MS 6043	Numerical analysis of surface integrity in parallel turning process Part I: Influence of cutting tool parting distance Veldi Kanakaraju, Faisal Hassan, Kalidasan Rathinam and Gavendra Norkey 0	0355
MS 6066	Effect on addition of Polypropylene fibers in wood ash-fly ash based geopolymer concrete Arunkumar K, Muthukannan M, Dinesh Babu A, Hariharan A.L and Muthuramalingam T	0359
MS 6084	Behaviour of alkali activated concrete under marine conditions P Saravanakumar and P Kalaivani	0366
MS 7087	Thermal barrier coating system for Internal Combustion Engine application-A review Chauhan Nilesh and Chauhan Kamlesh	0371
MS 7099	Study on Rectification of Issues faced by Ultrasonic Welding of Medical "E-Stethoscope" by Adhesive Bonding Technique S.C. Bhopi, V. B.R. Miriyala, S.V. Parah, A. S. Haldankar, and S.P. Pandey	0381

ICMSMT

The scope of the International Conference on Materials Science and Manufacturing Technology (ICMSMT) is to provide a forum for researchers, scientists, academicians, scholars and practitioners around the world to present papers on recent developments in the broad fields of Materials Sciences and Manufacturing Technology. It also provides a premier interdisciplinary platform for researchers, practitioners and educators to present and discuss the most recent innovations, trends, and concerns as well as practical challenges encountered and solutions adopted in the fields of Materials Science, Engineering and Manufacturing. Participants will have the opportunity to exchange their research findings and discuss theoretical and methodological perspectives in materials science and manufacturing technology. ICMSMT is an annual event and is conducted in the second week of April every year.

Call for Papers

ICMSMT 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 twelve pages as per the IOP single column format shall be submitted. Extra page charge is applicable for the manuscripts with more than twelve pages. The manuscript template shall be found in the downloads section. The manuscript should contribute original research ideas, developmental ideas, analysis, findings, results, etc. The manuscript should not have been published in any journals/magazines or conference proceedings and not under review in any of them. Further the manuscript should contain the name of the corresponding author with e-mail id and affiliation of all authors. Soft copy of the full length manuscripts (in .doc and .pdf) shall be submitted to ICMSMT office as per the submission guidelines.

Topics

Research manuscripts and proposals are invited in the following topics (but not limited to)

Advanced materials Aerodynamics

Biomaterials Manufacturing systems and simulation Composite materials Machine design & Machinery dynamics

Polymer science Nanotechnology

Renewable materials

Functional materials

Nano materials

Building materials

Chemical materials

Mechanical dynamics and vibration

Mechanical strength & Design

Casting technology and equipment

Welding technology and equipment

Plastic processing technology

3D materials

Cellular manufacturing

3D materials Cellular manufacturing
Cryogenic materials Advanced manufacturing processes

Energy storage and conversion Laser processing & Automation

materials Industrial automation and process control

Smart/Intelligent materials/Intelligent Intelligent controllers

systems
Optical/Electronic/Magnetic materials

Automation, control and information

technology

Magnetic materials and smart materials for

specific applications

MEMS and structural control

Active materials in MEMS applications Materials property and characterisation

Thin film technology

Virtual instrumentation in automation

Machine vision system

Industrial robots and automation

Controllers and distributed control system

Embedded system
Sensors for automation
Vibration engineering

Peer review policy

Each submitted manuscript will receive a unique paper id. The manuscripts will be initially screened to check for the conference scope and originality. All the submitted manuscripts will be sent for technical peer review process and the corresponding author will be notified the outcome of the review process. ICMSMT adopts double blind review process. If reviewers recommended for further improvements in the manuscript, the manuscript will be sent back to the corresponding author and the revised version of the manuscript shall be submitted within fifteen days on the date of notification. The final decision on the manuscript will be announced after the third round of evaluation by the technical program committee.

Publications

The registered and presented papers of the ICMSMT will be published into the book of conference proceedings and the hard copy of the book of proceedings will be given to the participants during the conference. All the accepted and registered papers of ICMSMT will be published in the IOP: Materials Science and Engineering (a conference proceedings journal) which is indexed in CPCI – Web of Science (Thomson Reuters), SCOPUS, Inspec, International Nuclear Information System (INIS), NASA – ADS, Chemical Abstracts, Polymer Library, etc.

Academic Partner

Akshaya College of Engineering Technology, Coimbatore, Tamil Nadu, India.

Industry Partner

Diligentec Solutions, Coimbatore, Tamil Nadu, India.

Industry Partner



Diligentec Solutions, Coimbatore, Tamil Nadu, India is a multi-discipclinary consulting, research, training and data management company in the field of Engineering & Technology. The team members of Diligentec Solutions are specialized in providing technical assistance in the fields of Science, Engineering and Technology. The research team at Diligentec Solutions is responsible for breakthrough innovations in the most vibrant engineering domains. As a group of active engineers Diligentec have been involved in numerous design challenges in our research efforts so far. People at Diligentec Solutions, largely believe that Engineering & Technology are reinventing our world in every possible facet. And it becomes imperative that as passionate Engineers, Diligentec jump into the jargon to solve real world problems and take the human race forward. Dilgentec provides full spectrum of conference organization and management solutions.

Official website: www.diligentec.com

Academic Partner



Akshaya College of Engineering and Technology was established in the year 2009 by Akshaya Charitable Trust with a Mission for providing World class Education for future Engineers with an aim to impart quality technical education with ethical as well as societal values. The Trust was formed by the professionals with more than 25 years of industrial experience. Akshaya College of Engineering and Technology is a prestigious institution acclaimed for its academic excellence, research initiatives, creative work, world class pedagogy, all around technical training, ability for honing leadership skills, well qualified and experienced faculty. It is a serene green campus with full of grown up trees and lush green lawns providing a beautiful environment.

Official website: www.acetcbe.edu.in

Media Partner



Witan / Witenagemot (Old English pronunciation: ['witena je'mot] translated in current English as the "meeting of wise men"), was a political institution in Anglo-Saxon England which operated before the 7th century until the 11th century. Witans would advise the king on all areas related to his kingdom – The witenagemot was known to be the advisory council. **Witan World** is a revolutionary technology platform focused on exchange of knowledge & meaningful communication. At Witan World, people believe that all human beings are Kings & Queens of their own Kingdom, Witan World as your trusted councilman are committed for your Success. The goal of Witan World is to empower the world to have meaningful conversations about future.

Official website: www.witanworld.com

Publishing Partner



IOP Science is an online service for journal content published by IOP Publishing, UK. IOP Science embraces innovative technologies to make it easier for researchers to access scientific, technical and medical content. IOP Science has been designed to make it easy for researchers to discover relevant content and manage their research information.

Indexing & Abstracting

Conference Proceedings Citation Index - Science (CPCI-S) - (Thomson Reuters, Web of Science), Scopus, Compendex, Inspec, INIS (International Nuclear Information System), Chemical Abstracts, NASAAstrophysics Data System, Polymer Library

JOURNAL HISTORY

2009-present

IOP Conference Series: Materials Science and Engineering

doi:10.1088/issn.1757-899X Online ISSN: 1757-899X Print ISSN: 1757-8981

Official website: www.iopscience.iop.org



To conduct a Premier International Conference with the complete spectrum of conference management solutions at your institute, please contact

DILIGENTEC SOLUTIONS
Coimbatore | Tamil Nadu | India

(\$\square\$ (+91) 78680 02762
www.diligentec.com

☑ diligentecsolutions@gmail.com