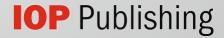
IOP Conference Series Materials Science and Engineering

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

Proceedings of the ICMSMT 2020 - Vol. 2 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 3030	Effect of heat treatment on the corrosion resistance of S43035 ferritic stainless steel in dilute sulphate-chloride environment <i>Roland T. Loto</i>
MS 3035	Aerodynamic optimization of the body of a bus Oscar Arteaga, Hernán Morales V., Héctor Terán, Sonia Chacon, Mario A. Lara, Juan Rocha-Hoyos, Édison Argüello and Ronny P. Aguirre
MS 3039	Electrochemical performance of 2-meracaptobenzothiazole on the corrosion inhibition of selected metallic alloys in dilute acid media Roland Tolulope loto, Temitayo Morenikeji and Idowu Ayodeji Charles
MS 3040	Data on the corrosion resistance quenched 420 martensitic stainless steel and annealed 316 austenitic stainless steel in dilute H_2SO_4 and HCl acid concentration Roland T. Loto, Cleophas Loto, Osazaenaye Aiguwurhuo and Ukene Evana
MS 3082	Numerical modeling of ultrathin CdTe solar cell with back surface field layer Virang Shukla and Gopal Panda
MS 3091	Design of a 1-3 smart viscoelastic composite layer for augmented constrained layer damping treatment of plates Abhay Gupta, Shashidhar Reddy Rajidi and Satyajit Panda
MS 3092	Vibration control of loosely supported cross-flow heat exchanger tube undergoing fluid elastic instability Shashidhar Reddy Rajidi, Abhay Gupta and Satyajit Panda
MS 4008	Analytical and Experimental study on load-deflection characteristics of Ternary blend SCC beams P. S. Lakman Prabu and S. S. Vivek
MS 4016	Mechanical and durability characteristics of multiwalled carbon nano tube in concrete R.Rashmi and R.Padmapriya
MS 4023	Light weight polymer Nano composites reinforced with h-BN for high temperature applications Mantesh C. Choukimath, N. R. Banapurmath, Arun Y. Patil and Sandesh Hemadri
MS 4028	Effect of silica fume and induction furnace slag in the compaction and strength characteristics of black cotton soil Winny Joseph and R Sridhar
MS 4031	Long term preservation of rainwater for the exploitation of potable water <i>Velumani.P, Mukilan.K and Manikanda Prabhu P</i>

MS 4039	Review of research issues and challenges of maturity models concerning industry 4.0 N Vijaya Kumar, Sachin Karadgi and B B Kotturshettar	0482
MS 4058	Flame analysis for prediction of thermocouple temperature and quality of sponge iron at TATA steel long products limited Himanshu Parida, Brahma Deo, Puneet Choudhary, Parimal Malakar and Susil Kumar Sahoo	0491
MS 4061	Energy-distance & degree: multi-objective based optimized clustering and route discovery in wireless sensor network Mahendran N and Mekala T	0497
MS 4064	Performance study of flat heat pipe with metallic copper hierarchical structure as a wick A Brusly Solomon, Catherine Joy, A Albert Rajan, S Emerald Ninolin and Jocin Varghese	0507
MS 4069	Defect minimization of an injection molded plastic component using conformal cooling channels D S Singraur, B T Patil and V A Shaikh	0517
MS 4079	Behaviour of conventional concrete blended with m-sand and iron shavings D. Satyanarayana and R. Padmapriya	0523
MS 4090	Assessment of mechanical properties by using powder waste glass with cement in concrete mix Gupta Jagriti, Jethoo A.S. and Lata Nandeshwar	0530
MS 4092	Solar reduced graphene oxide coated sponge for oil and organic solvent adsorption studies K B Anand, K Mohanapriya, S D Datar and N Jha	0536
MS 4093	Design and optimization of operating parameters for areca nut de-husker <i>H K Madhusudhana</i> , <i>G Jangali Satish</i> , <i>N Vijayakumar and Patil Sachin</i>	0541
MS 5009	Gainful utilization of plastic waste in dense bituminous macadam Abhishek Garga, Prakash Somanib, Arun Gaurc, and B L Swamid	0550
MS 5020	Heterogeneous photo catalytic process using TiO ₂ for removing Levetiracetam in water – A study P Chinnaiyan, S G Thampi, M Ananthkumar, A C Bharath Krishnaa, Malavika Sasi and L Tejashwi	0557
MS 5025	A review on strength characteristics of GGBS based fiber-reinforced lightweight aggregate concrete S Sindhuja, K Saketh Raman and P Bhuvaneshwari	0561

MS 5034	Synthesis, growth, structure, spectroscopic and physicochemical properties of 18-crown-ether (Barium-II) bisthiocyanate monohydrate single crystal: BCBT <i>K. Showrilu, V. Ramesh, K. Rajarajan and S.A. Martin Britto Dhas</i>	056
MS 5037	Study on the efficiency of CFRP and GFRP in corrosion resistance of rebar embedded in concrete M. Ananthkumar, K M Mini, C Prakash, S Vishnu Sharma and A C Bharath Krishnaa	057
MS 5041	Dielectric studies of ferrimagnetic-piezoelectric composites Devidas G. B, S. Abdul Khader, Nityananda Das, Asiya Parveez and T. Sankarappa	058-
MS 5043	Experimental investigation of bottom ash as a capable Soil stabilizer Arun Gaur, Nikhil Mathur and Prakash Somani	058
MS 5065	Hemicyanines-potential heavy metal ion sensors Gopika G. S., Pranav Raj M. P., Merin Eapen, Rani P., Lekshmipriya S, Anandu P.Dev and Zeena S. Pillai	059.
MS 5096	Seismic performance of box-girder bridge with different piers Nilanjan Tarafder and L. V. Prasad M	060
MS 6005	Effect of quantity of industrial waste on eco-friendly geopolymer concrete Endow Mazumder and L.V Prasad M	060
MS 6007	Mechanical behaviour of self compacting concrete with hybrid fibres <i>P S Lakman Prabu</i> , <i>S Rambharath and S S Vivek</i>	061.
MS 6009	Simulation study on mechanical properties of a sustainable alternative material for electric cable cover DN Yashasvi, Jatin Badkar, Jyoti Kalburgi, Kartik Koppalkar, Khushi Purohit, Arun Patil, Gururaj Fattepur, and Basavaraj B Kotturshettar	062.
MS 6012	Study on mechanical properties of alkali activated binary blended binder containing steatite powder and fly ash / GGBS Premkumar R, Ramesh Babu Chokkalingam, M Shanmugasundaram and Ragasree A	062
MS 6018	Performance traits of a newly proposed modularity function for spatial networks: Better assessment of clustering for unsupervised learning Raj Kishore, S Swayamjyoti, Zohar Nussinov and Kisor K Sahu	063
MS 6033	Investigation on the effect of steel fibers in geopolymer concrete Chithambar Ganesh. A, Sowmiya. K, and Muthukannan. M	064.

MS 6038	Air assisted atomization characterization of biodegradable fluid using micro lubrication technique Dipali K. Bhise, Bhushan T. Patil and Vasim A. Shaikh	064
MS 6056	Flyash and carbon fibers reinforced aluminum-based matrix composite for structural applications Adarsh Patil, N. R. Banapurmath, Anand M. Hunashyal and Vinod Kumar V. Meti	065
MS 6061	Study on a revolutionary composite material: functionally graded material (FGM) Simmi Gupta and H.D. Chalak	066
MS 6070	3-D Comparative Analysis of 3-phase Transformer core Using CRGO Silicon Steel, Amorphous and FINEMET for Low Losses using ANSYS Sarpreet Kaur and Damanjeet Kaur	066
MS 6082	Transesterification studies on non-edible and edible oil for the production of methyl ester (biodiesel) — optimization using response surface methodology V Sridevi, Pyla Srinu, P.A. Satyanarayana, P Venkat Rao, P V Satyanarayana Murthy and Husam Talib Hamzah	067
MS 6089	Study of electrochemical behavior, hydrogen permeation and diffusion in pipeline steel Swapna Dey, Seetharaman Sivaprasad, Nityananda Das and Indranil Chattoraj	068
MS 7015	Characterization of mechanical behavior of pineapple leaf fiber composite Hamritha S, Hemanth M and Rajesh B	069
MS 7031	Indian sign language interpreter using image processing and machine learning Shubhendu Apoorv, Sudharshan Kumar Bhowmick and R Sakthi Prabha	0700
MS 7057	Magnitude estimation of the 1900 earthquake in Venezuela based on its coseismic effects Raquel Vásquez, Alejandra Leal Guzmán, José Antonio Rodríguez, Sirel Colón and Franck Audemard	071.
MS 7059	Thermographic imaging for use in artificial intelligence and vision algorithms Jesús Silva, Liliana Patricia Lozano Ayarza, Julio Cesar Mojica Herazo, Omar Bonerge Pineda Lezama, Hugo Hernández Palma and Carlos Vargas Mercado	071
MS 7082	Recommendation system to improve students performance using machine learning <i>P.Ramya, S.G Balakrishnan and M.Kannan</i>	072.

MS 8011	Turned AISI 4340 heat-treated steel surface quality investigations in dry and MQL cooling conditions Hiraman N. Sikdar, M. VeeraBhadra Rao, Bhushan T. Patil, Vasim A. Shaikh and D.S. S. Sudhakar	0733
MS 8019	Productivity improvement through identifying hazardous conditions in steel foundry Edward Bernard and Gajanan Shankarrao Patange	0739
MS 8035	Comparative Oxygen Evolution Reaction performance of cobalt oxide electrocatalyst in combination with various metal ions MCo ₂ O ₄ (M= Mn ²⁺ , Cu ²⁺ , Co ²⁺ , Zn ²⁺ , Fe ²⁺ , Mg ²⁺) Varun Rai, M.V. Venkatashamy Reddy, Stefan Adams and Daniel John Blackwood	0744
MS 8055	Effect of spatial distribution of nanopores on mechanical properties of monolayergraphene	075
	K Saumya, K K Gupta, A Roy and S Dey	0751
MS 8058	Effect of silicon dopant on mechanical properties of monolayer graphene V K Majeti, A Roy, K K Gupta and S Dey	0757
MS 8060	Effect of mixing proportion and mixing time on primary slurry retention and surface roughness of investment casting shells <i>A V Vyas, M P Pandya and M P Sutaria</i>	0763
MS 8070	Study of technologies implemented in the operation of SF6 switches Sergio. Diaz, Jose. Nuñez, Kelly. Berdugo, Daniel. Narvaez and Kevin. Gomez.	0771
MS 8072	Influence of Al-3Ti-0.15C and Ce on Microstructure and Tensile Properties of Al-Si-Cu 319 alloy <i>D N Patel, J Joseph and M P Sutaria</i>	0778
MS 8074	Comparison of bio inspired algorithms applied to the hospital mortality risk stratification Jesús Silva, Yaneth Herazo – Beltrán, Freddy Marín- González, Noel Varela, Omar Bonerge Pineda Lezama, Pablo Palencia and Carlos Vargas Mercado	0785
MS 8092	Assessment of stress and safety practice level of heavy commercial passengers vehicle drivers Mahinda Sivaraman, M.Suresh and Rajkumar Ranganathan	0791
MS 8096	A Novel Rescuebot for Borehole Accidents K H Shakthi Murugan, A Jasmine Vijithra, B Padmavathi, V Jacintha and K Sumathi	0798
MS 8098	Design and analysis of multi-angular gearless transmission system R P Barot and D M Patel	0802

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