



Second International Conference on
Materials, Design and Manufacturing Process
ICMDM-2023
23-25 February, 2023



25 Years of Excellence
in CAD/CAM/CAE &
New Product
Development

Organized by

Department of Mechanical Engineering & AU-FRG Institute for CAD/CAM
College of Engineering, Guindy, Anna University, Chennai, India

Schedule for Technical Sessions

Session : I A – Metal Matrix composites

Venue: TAG Auditorium

Date: 23.02.2023 (Thursday)

Time: 02:45 p.m. - 03:45 p.m.

S.No.	Paper ID	Title of the Paper
1.	16675	Investigation of corrosion behaviour of Ti-3Al-2.5V-xWC composite
2.	16679	Mechanical and wear behaviours of AA7075/calcium silicate composites
3.	16751	Wear And Friction Analysis of Magnesium Alloy Composites using Taguchi-Based Additive Ratio Assessment and Response Surface Methodology
4.	16698	ANN and Fuzzy modelling for Wear and C.O.F of bronze-based metal matrix composite
5.	16653	Promising improved mechanical, wear, corrosive properties by the impact of CNTs on Al alloy by FSP- a review

Session- I B - Finite Element Analysis and Structure Optimization

Venue: Aatral Arangam

Date: 23.02.2023 (Thursday)

Time: 02:45 p.m. - 03:45 p.m.

S.No.	Paper ID	Title of the Paper
1.	16581	Numerical and Experimental Validation of CP-Ti (grade-2) under cryogenic condition
2.	16704	Structural simulation of yaw and pitch gearbox housing with roller bearing
3.	16705	Design and optimization of bus body frame structure
4.	16706	Design and optimization of six port rotary union
5.	16708	Redesign and analysis of engine mount for light commercial vehicle

Session - I C- Advanced Machining and Finishing Processes

Venue: HM Hall

Date: 23.02.2023 (Thursday)

Time: 02:45 p.m. - 03:45 p.m.

S.No.	Paper ID	Title of the Paper
1.	16589	Machine Learning Approach towards Performance Measurement in EDM of LM6 Aluminium Alloy
2.	16765	Optimization of External Ball Burnishing Process on Mg-Sic Metal Matrix Composite using Grey Relational Analysis
3.	16613	Optimization of Process Parameter in Micro Electrochemical Machining using Topsis Technique with Analytical Hierarchy Process (AHP)
4.	16735	Effect of process parameters and solid lubricant on surface roughness, kerf characteristics of AA7075 composite by abrasive waterjet machining
5.	16684	Steps Followed for Data Set Preparation in Prediction of Roughness using Machine Learning Technique

Session-II A – Fibre reinforced composites Characterization

Venue: TAG Auditorium

Date: 23.02.2023 (Thursday)

Time: 03:45 p.m. - 04:45 p.m.

S.No.	Paper ID	Title of the Paper
1.	16651	Investigation of mechanical properties of 3D printed wood reinforced polylactic acid composite
2.	16768	Various Techniques on Improvisation of Mechanical Properties of Kenaf Fibre Composites- A Review
3.	16634	Fatigue and Creep behaviour of Abaca-Sisal Natural fiber reinforced polymeric composites
4.	16758	Experimental investigation of date seed and neem powder reinforced natural fibre composites
5.	16738	Investigation of epoxy/polyurethane coating for offshore application pipelines: a review
6.	16677	Experimental and theoretical investigations on thermal properties enhancement of paraffin wax using SiO ₂ nanoparticles

Session-II B- New Product Development

Venue: Aatral Arangam

Date: 23.02.2023 (Thursday)

Time: 03:45 p.m. - 04:45 p.m.

S.No.	Paper ID	Title of the Paper
1.	16709	Design and analysis of integrated roller and plow type weeder for female agricultural workers
2.	16742	Fixture design for measuring internal contours
3.	16595	Design and dynamic analysis of grouser in deep-sea mining vehicle for enhance traction in soft seabed
4.	16744	Multi-mode dual axle four wheel steering system
5.	16713	A Comparative study on optical and thermal performance of parabolic trough concentrator using a bundle of absorber tubes

Session-II C Advances in Joining Technologies

Venue: HM Hall

Date: 23.02.2023 (Thursday)

Time: 03:45 p.m. - 04:45 p.m.

S.No.	Paper ID	Title of the Paper
1.	16599	Effect of rotation speed on the microstructure and mechanical properties of friction stir dissimilar welded AZ91-AZ31 alloy
2.	16678	Effect of shielding gas nozzle blown distance in laser welding of SS 304 H
3.	16703	Metallurgical and mechanical characterization of Inconel 625/SS 304 weldments produced using selective microwave hybrid joining technique
4.	16770	Study of the mechanical properties and microstructural analysis of distinct grades of stainless steel by shielded metal arc welding
5.	16554	Optimization of Process Parameters for improved Surface characteristics in Friction Stir processed AA6061-ZrO ₂ -GNP Surface Composite
6.	16782	Cavity and Thickness effect on the superplastic forming process of an Al-7075 alloy by the variable pressure and temperature methods

Session-III A – Fabrication and Characterization of FRCs and MMCs

Venue: TAG Auditorium

Date: 24.02.2023 (Friday)

Time: 10:15 a.m. – 11:15 a.m.

S.No.	Paper ID	Title of the Paper
1.	16636	Fabrication and Characterization of fibre Metal Laminates for the development of Subsea housing
2.	16714	A review on corrosion behaviour, fatigue behaviour and fracture toughness of al alloy MMCs
3.	16667	Failure pattern analysis of spherical sandwich structure subjected to impact test
4.	16756	Development and characterization of electrospun aminated polystyrene adsorbent with cerium oxide nanoparticles
5.	16722	Investigation on microstructure and mechanical properties of Leptadenia Pyrotechnica fiber-reinforced composites

Session-III B- Industrial Design

Venue: Aatral Arangam

Date: 24.02.2023 (Friday)

Time: 10:15 a.m. – 11:15 a.m.

S.No.	Paper ID	Title of the Paper
1.	16737	An analytical method to compute the loads on main towers by the cable system when a rated load is lifted and moved on the main cable during the construction of large-span Steel arch bridge
2.	16594	Optimization of cutting force and surface roughness in turning Ti-alloy
3.	16616	Modelling and analysis of forging load using aluminium billets during cold forging process
4.	16673	Design and prototype development of remotely operated solar surface vehicle
5.	16780	Computed Aided Design of 3D Template for Pedicle Screw Trajectory in Thoracic Vertebrae

Session-III C - Behaviour of Materials

Venue: HM Hall

Date: 24.02.2023 (Friday)

Time: 10:15 a.m. – 11:15 a.m.

S.No.	Paper ID	Title of the Paper
1.	16745	Investigation on Thermal Behaviour of Copper-Water Heat Pipe with Respect to Power Input Under the Condenser Cooled by Air Cooling
2.	16741	An Analytic Study on the Enhancement of Heat Transfer with Nanofluid
3.	16605	An investigation of Corrosion analysis on Dissimilar Friction Stir welded AA6082 and AA2014 weldments
4.	16699	Investigate the Welded AISI 4140 Bearing steel's mechanical properties using Gleeble 3500
5.	16604	Mechanical and Tribological Properties of Al 2014/ZrB ₂ in-situ nanocomposites

Session-IV A – Heat Treatment

Venue: TAG Auditorium

Date: 24.02.2023 (Friday)

Time: 11:15 a.m. – 12:15 a.m.

S.No.	Paper ID	Title of the Paper
1.	16755	Impact of heat treatment process on the machinability behaviour of brass alloy 272
2.	16644	Effect of Post Weld Heat Treatment on the Ultimate Tensile Strength and Microhardness Characteristics of Friction Stir Welded Joints of AA6082/3 wt.% ZrO ₂ /5 wt.% B ₄ C hybrid composites
3.	16668	Influence of Ageing Temperature on the Electrochemical Corrosion Behaviour of AZ91D/TiN/hBN Magnesium Composites
4.	16701	Microstructural evolution during isothermal multiaxial forging of nickel-based superalloy IN718
5.	16682	Effect of Heat Input on Corrosion behaviour of Single Pulse TIG Welded Nitinol Shape Memory Alloy

Session - IV B – FEA & CFD**Venue: Aatral Arangam****Date: 24.02.2023 (Friday)****Time: 11:15 a.m. – 12:15 a.m.**

S.no.	Paper id	Title of the paper
1.	16654	A study on improving the energy efficiency by flow physics of cross-flow water turbines hydropower using CFD software Ansys fluent
2.	16661	Design and analysis of multilayered micro perforated panel for noise control application
3.	16707	Design and development of liner installing apparatus for mineral ball mill
4.	16710	Integration of suspension and anti-roll bar bracket for performance improvement
5.	16723	IoT controlled fluid circulation in hydroponics method of plumbed PVC planting pipes with CFD analysis

Session - IV C – Emerging Materials**Venue: HM Hall****Date: 24.02.2023 (Friday)****Time: 11:15 a.m. – 12:15 a.m.**

S.No.	Paper ID	Title of the Paper
1.	16650	A Critical Review on the effect of Various Sustainable reinforcements on Armour grade aluminum alloys
2.	16606	Diamond - Like Carbon Coating - Processing and Applications
3.	16641	Study of Machining performance and Tribological characteristics of Monolayer, Compound and Bilayer Diamond-Like Carbon (DLC) coatings on HSS drill bits
4.	16646	Development of Cu-hBN Metal Matrix Nanocomposites using Powder Metallurgy Route
5.	16640	Characterization of hot workability of a Cu containing High Strength Low alloy steel using process map

Session-V A -Nanomaterials & its Characterization

Venue: TAG Auditorium

Date: 25.02.2023 (Saturday)

Time: 11:00 a.m. – 12:00 noon

S.No.	Paper ID	Title of the Paper
1.	16669	Investigation on Corrosion Behaviour of Metal Oxide Nanoparticle Reinforced Magnesium Composites by Salt Spray and Immersion Corrosion Test Methods
2.	16670	Process Optimization and Study on Corrosion Behaviour of AA2014/Al ₂ O ₃ Nanocomposites Using Taguchi Grey Response Surface Methodology
3.	16610	Microstructural evolution and investigation of mechanical properties of Al 7055 -Nano Si ₃ N ₄ composites
4.	16752	Synthesis of TiO _x nanoparticles by ultrashort pulsed laser ablation in an aqueous medium
5.	16753	A Review On Composite Materials: Selection And Its Applications

Session-V C- Additive Manufacturing and IoT

Venue: HM Hall

Date: 25.02.2023 (Saturday)

Time: 11:00 a.m. – 12:00 noon

S.No.	Paper ID	Title of the Paper
1.	16721	Strain Hardening response of AlSi ₁₀ Mg alloy processed through SLM
2.	16777	Supervised Machine Learning to Monitor the Product Quality in 3D Printing
3.	16598	High Cycle Fatigue behaviour of AlSi ₁₀ Mg alloy processed by Selective Laser Melting
4.	16658	Programmable Logic Controller based 3-axis Robotic Arm using Industrial IoT
5.	16596	Indigenization of buoy components using additive manufacturing technique
6.	16769	A comprehensive review of wire-inject arc additive manufacturing: process parameters, applications and future potential

Session-VI A – Materials Characterisation

Venue: TAG Auditorium

Date: 25.02.2023 (Saturday)

Time: 01:00 p.m. – 2:00 p.m.

S.No.	Paper ID	Title of the Paper
1.	16685	Cold-formed steel stiffened and unstiffened elements as beam-columns
2.	16689	Effect of delta wire feed speed on the tensile and corrosion properties of double pulse MIG welded IN617
3.	16688	Impact of Calcium Sulphate on Wear and Cell Viability of UHMWPE Composite for Bio Implant Application
4.	16655	A Review: Fabrication techniques of the Hastelloy (Super alloy) composites and it impacts on the properties.
5.	16627	Investigations of Tribological characteristics of Al7075 coated with Aluminium Chromium Nitride using Magnetron Sputtering

Session-VI B- Related Topics

Venue: Aatral Arangam

Date: 25.02.2023 (Saturday)

Time: 01:00 p.m. – 2:00 p.m.

S.No.	Paper ID	Title of the Paper
1.	16591	Influence of austenitization temperature on tensile properties and impact toughness of niobium micro-alloyed carbide free bainitic steel
2.	16609	Surface integrity analysis of SS316 Pocket milling by using abrasive water jet machining.
3.	16719	Assessment of the Microstructural Progression During Constrained Groove Pressing of Aluminium2014 MMC
4.	16732	Multi Objective Optimization And Experimental Investigation Of Carbon Short Fibres Reinforced With AA6061-ZrO ₂ Hybrid Metal Matrix Composite Using Stir Casting Method
5.	16783	Effect of Feed Rate, Spindle Speed, and Pitch size on the Formability of Magnesium AZ31B sheets during the Incremental Forming Process.

Session-VI C- Related Topics

Venue: HM Hall

Date: 25.02.2023 (Saturday)

Time: 01:00 p.m. – 2:00 p.m.

S.No.	Paper ID	Title of the Paper
1.	16656	Identification of Tool Defects in Legacy Machines by Image Processing
2.	16711	A study on converting exhaust gas to hydrogen in diesel engine
3.	16766	Analysis of Tolerance Combinations on the Functional Accuracy of 3RRR Planar Parallel Manipulator
4.	16642	Copper recovery from the Printed Circuit Board (PCB)
5.	16671	Insights of recent trends on metal matrix composites