WCMNM 2025 Program (Tentative)

The 8th World Congress on Micro and Nano Manufacturing (WCMNM 2025)

September 15-18, 2025, University of Malta, Valletta Campus, Malta

Monday, September 15, 2025		
Time	**Duration**	**Activities**
18:00 - 20:00	2 h	Welcome Reception and Registration (Valletta Campus)

Tuesday, September 16, 2025				
Time	**Duration**	**Activities**		
08:00 - 09:00	1 h	Registration		
09:00 - 09:30	30 m	Welcome and Remarks (Aula Magna - Level 1)		
0930: - 10:30	1 h	**Plenary Session 01** (Aula Magna - 1st Floor) Title: Extra Terrestrial Manufacturing: Exploring Micro- and Nano- manufacturing in Outer Space Speaker: Professor Sathyan Subbiah Session Chair: Dr Pierre Vella		
Room		**Aula Magna**	**Meeting Room 103**	**Meeting Room 102**
10:30 - 11:30	60 m	**Session 1: Additive Manufacturing & 3D Printing** (Session Chair: Afzaal Ahmed)	**Session 2: Process Design & Manufacturing Systems** (Session Chair: Iban Quintana)	**Session 3: Sensors & Actuation** (Session Chair: Michael Cullinan)
	20 m	10 Numerical Study on Jet Formation of In-Gel Near-Field Electrospinning (Sadeghi & Guo)	24 Femtosecond Laser-Driven Hybrid Manufacturing for High-Efficiency, Single-Use SERS Substrates (Gaddam et al.)	7 Proposal for Flow Visualization Micro Device Processing (Ayoob et al.)
	20 m	35 Micro-component manufacturing via Vat Photopolymerization Processes (VPP) (Rebaioli et al.)	12 Mechanical Synthesis of Graphene by Impact Induced Shearing of Graphite (Subbiah & Nabhan)	20 Theoretical Modeling of Capacitive Micromachined Transducer-based Gas Sensors (Harchegani & Valentincic)
	20 m	28 Microfabrication of Rapid Micro-Moulds Combining Additive Manufacturing and custom UV-LED photolithography tool (Gulcur et al.)	15 Towards Reducing Implant Pitch in Laser Implantation Texturing (LITex) (Römer et al.)	5 High Precision Positioning Technology Using Fiber Optic Fabry-Pérot Interferometer in Micro and Nano Manufacturing (Zhou et al.)
11:30 - 12:00	30 m	Coffee Break		
1200 - 13:00	60 m	**Session 4: Micro-Machining & Fabrication** (Session Chair: Martin Jun)	**Session 5: Laser Processing 1** (Session Chair: Gert-willem Römer)	Session 6: Composite Materials (Session Chair: Deepak Marla)
	20 m	46 Approach for estimation of instantaneous shear angle in micro-machining of ductile materials with varying uncut chip thickness (Pradhan & Ahmed)	55 Effect of Weld Spacing on Shear Strength and Intermetallic Compound Formation in Laser-Welded Al–Stainless Steel Joints (Chen et al.)	49 A Comparative Study of Cooling and Lubrication Strategies for Sustainable Micromachining of CFRP (Shaik & Mittal)
	20 m	45 Surface Generation for Cutting Tool and Workpiece Contact Detection in Micromilling Process (Paul et al.)	47 Quasi-Continuous Wave Fiber Laser Welding of Steel-Copper-Steel Clads to nickel-plated copper busbar for Li-ion battery packs (Gorai & Singh)	59 Performance Assessment of Advanced Wire Electrodes in Drilling Multidirectional CFRP Laminates Using Wire EDM (Abdallah)
	20 m	21 Femtosecond Laser-Induced Graphene on 3D Printed Polymer with enhanced conductivity via laser annealing (Shiby et al.)	63 Laser Drilling Large High-Density Arrays of Micro-Holes on Foils (Turkus et al.)	
1300 - 14:15	1 h 15m	Lunch		
14:15 - 15:15	60 m	**Session 7: Micro and Nano Fluidics** (Session Chair: Lawrence Kulinsky)	**Session 8: Equipment Development & Tooling** (Session Chair: Tatsuya Funazuka)	
	20 m	6 Ultralow Water Adhesion Surface by Laser Texturing and Vacuum Storage (Radhakrishnan et al.)	29 An Analytical Model for the Prediction of Chip Evacuation Force in Micro-Drilling (Lee & Kapoor)	
	20 m	13 Fabrication and Performance Evaluation of Micro Precision Structured Surfaces to Control Wettability and Droplet Shape (Kakuta)	39 Effect of Punch with Nanometer Periodic Structure on Crack Formation in Piercing of Amorphous Electric Steel Sheets (Shiratori et al.)	
	20 m	57 From Microstructure to Performance: Freeze-Cast Alumina for High-Temperature Gas Permeability (Ozdoganlar)	40 Investigation on relative tool sharpness in ultrasonic vibration assisted diamond turning of ductile materials (Padmanabhan & Ahmed)	
15:15 - 15:45	30 m	Coffee Break		

15:45 - 17:00	75 m	**Round Table Discussion 01** (Aula Magna - 1st Floor) Title: "What are the growing and/or new killer application areas for micro/nano manufacturing? Chair: TBD Panelists: TBD
17:00 - 17:30	30 m	**I2M2/IFMM/4M Executive Committee Meetings** (Invitation Only)
17:30 - 18:30	1 h	**Joint Executive Committee Meeting** (Invitation Only)

Wednesday, September 17, 2025				
Time	**Duration**	**Activities**		
09:00 - 09:15	15 m	Welcome and Activity Announcements (Aula Magna- 1st Floor)		
09:15 - 10:15	1 h	**Plenary Session 02** (Aula Magna - 1st Floor) Title: High-resolution Printing for On-demand Fabrication of Hybrid Electronic Systems Speaker: Professor Professor Kira Barton Session Chair: Professor Sylvie Castagne		
Room		**Aula Magna**	**Meeting Room 103**	**Meeting Room 102**
10:15 - 11:15	60 m	**Session 9: Direct Energy Deposition** (Session Chair: Lara Rebaioli)	**Session 10: On-Machine Metrology & Monitoring** (Session Chair: Ming-Chyuan Lu)	**Session 11: Surface Texturing & Smart Surfaces** (Session Chair: Tatsuhiko Azawa)
	20 m	34 Development and Modeling of a wire straightening mechanism for coaxial wire laser-directed energy deposition (Oraon et al.)	11 On-Machine Optical System for Accurate Workpiece Hole Centering in Micro Drilling (Pizzi & Annoni)	38 Superhydrophilic–Superhydrophobic Patterns via Mask-Free Atmospheric Pressure DBD Plasma Jet Treatment (Bayki & Mujumdar)
	20 m	54 A Simplified Model for Deposit Efficiency in DED Additive Manufacturing (Lin et al.)	17 Development of an Acoustic Emission Inspection Using Wavelet Scattering Method for Investigating the Shearing Process in Microforming (Kiswanto et al.)	36 Hydrogenated diamond-like carbon (H-DLC) thin film development for space mechanisms with enhanced tribological performance (Delgado)
	20 m	43 Enhancing Titanium Microhardness through NiTi and TiNiCu Coatings Developed Via Laser Directed Energy Deposition: A Comparative Study	65 In-line monitoring of processing disturbances in direct laser interference patterning (Gaddam)	42 Investigation of Surface Property Enhancement of Tool Materials via Micro-Shot Peening (Hsu)
11:15 - 11:45	30 m	Coffee Break		
11:45 - 12:45	60 m	**Session 12: Predictive Modelling & AI** (Session Chair: Khamis Essa)	**Session 13: Hybrid & Multiscale Manufacturing** (Session Chair: Krishna Saxena)	**Session 14: Life-Sciences & Biomedical** (Session Chair: Jian Cao)
	20 m	19 Investigation of Wire-EDM of Cryo-Treated Hastelloy C276: Experimental and numerical simulation (Maity & Padasethi)	51 Fabrication of Polymer-Based Cross Angle Optical Diffuser Films for LED Lights through Induction-aided Hot Embossing using Micro-patterned Mold Fabricated by Laser Micromachining (Deshmukh et al.)	56 Freeze Micromilling of Human Cartilage Implants for Reconstructive Surgery (Ozdoganlar)
	20 m	26 Intelligent Fault Diagnosis in Grinding: A Recurrence Plot and VGG16 Approach for Vibration Signals (Chung & Tseng)	8 Relationship Between Deformation of Microstructure and Force Behavior in Micro-extrusion of Pure Copper (Sugiyama et al.)	27 Novel Technology for Spin Casting of Elastic PDMS Membranes Integrated with Microfluidic Systems (Golden et al.)
	20 m	58 Classification of Surface Texture for Laser Processing by Using Unsupervised Machine Learning (Wang et al.)	41 A Preliminary Study exploring Dielectric Fluid Dynamics within the Inter-Electrode Gap in Micro-Electro-Discharge Milling (Bigdeli et al.)	3 Enhanced Cell Activity on Micro/Nano Texture Fabricated by Selective Laser Melting and Chemical Surface Treatment (Yamaguchi et al.)
12:45 - 14:00	1 h 15 m	Lunch		
14:00 - 15:00	60 m	**Session 15: Tribology & Tactile Surfaces** (Session Chair: Numpon Mahayotsanun)	**Session 16: Laser Processing 2** (Session Chair: Ramesh Singh)	
	20 m	61 Experimental Investigation of High-Speed Robotic Micromachining of Ti6Al4V (Kumar)	48 Experimental Analysis of Submerged Water-Assisted Laser Micromachining for High-Precision Microchannels (Rana et al.)	
	20 m	60 Acoustic Emission Analysis for Process Control in Laser-Induced Forward Transfer (Dilmy et al.)	50 Interfacial Chemistry and Mechanical Strength of Glass–Aluminum Joints Welded with Nanosecond Fiber Laser (Madapana et al.)	
	20 m	2 Regularity Controlled Metallic Unit-Cell Alignment for Heat Radiation Devices (Aizawa et al.)	62 Cost-effective laser texturing of electrodes for improved lithiumion battery performance	
15:00 - 15:30	30 m	Coffee Break		
15:30 - 16:45	75 m	**Round Table Discussion 02** (Aula Magna - 1st Floor) Title: "How can we make micro and nano technologies/machinery smarter and more intelligent?" Chair: TBD Panelists: TBD		
16:45- 18:45	2 h	**Valletta Tour & Travelling to Congress Dinner Venue**		
18:45 - 21:15	2 h 30 m	**Congress Dinner** (Radisson Blu)		

Thursday, September 18, 2025				
Time	**Duration**	**Activities**		
09:30 - 09:45	15 m	Closing Remarks & Remaining Activities Announcements (Aula Magna - 1st Floor)		
09:45 - 10:45	1 h	**Plenary Session 03** (Aula Magna - 1st Floor) Title: Novel Miniaturisation Technologies in Additive Manufacturing Speaker: Professor Arif Rochman Session Chair: Professor Tohru Sasaki		
10:45 - 11:15	30 m	Coffee Break		
Room		**Aula Magna**	**Meeting Room 103**	**Meeting Room 102**
11:15 - 12:15	60 m	**Session 17: Surface Enhancement and Analysis** (Session Chair: Bruno Azeredo)	**Session 18: High-Throughput MNM** (Session Chair: Josko Valentincic)	
	20 m	52 Tribological Study of Bamboo's Surfaces for Tactility Enhancement (Mahayotsanun & Nunthavarawong)	16 Optimization of micro injection molding of thermoplastic elastomers for producing durable functionalized surfaces (Baruffa et al.)	
	20 m	44 Analysis of Surface Measurement Methods for Roughness Clustering Prediction of Inconel 718 Manufactured Via WAAM (Raj et al.)	31 Production-oriented analysis of electrochemical deposition of high entropy alloys from aqueous electrolyte targeted towards modular mould applications (Saxena et al.)	
	20 m	23 Nanoscale Superfinishing of OFHC Copper using fabricated thermoplastic-SiC Flexible Abrasive Tools	4 Thick Monolithic Nitrogen Doped Silicon Carbide Dies for Galling-Free Mold Stamping of Glass Preforms (Aizawa et al.)	
12:15 - 13:30	1 h 15 m	Lunch and Best Presentation Awards		
13:30- 16:15	1 h 45 m	**Optional Tour** (Birgu)		