International Conference
on Advanced Materials
Mechanics & Manufacturing

Organized by:

LA2MP - Laboratory of Mechanics, Modeling and Manufacturing

ENIS - National School of Engineers of Sfax, Tunisia

Email - conference.a3m@gmail.com

SCIENTIFIC PROGRAM

Sousse - TUNISIA

March 20-21, 2023

Monday 20 / 03 / 2023 – Morning

9h15 – 10h00 — **Opening Ceremony**

Interventions of the A3M'2023 Conference Chairs:

Pr. Mohamed Amine BEN SOUF, ENIS, Sfax, TN

Pr. Moez BEYAOUI, ENIS, Sfax, TN

Interventions of A3M'2023 Organizing Committee Chairs

Pr. Hassen TRABELSI, ISSIG, GABES, TN

Pr. Dhouha TOUNSI, ISMS, Sfax, TN

10h00 – 11h — **Plenary Sessions**

10h00 – 10h30 **Plenary Session 1** *Chair : Professor Slim BOUAZIZ*

Professor Olivier BAREILLE

Ecole Centrale de Lyon / France

Laboratory of Tribology and dynamics of systems (LTDS)

10h30 – 11h00 **Plenary Session 2** *Chair : Professor Nabih FEKI*

Dr./Ing. Dhafer Ghribi

Technical Referent in gear transmissions

Senior Expert, Safran transmission systems / France

11h – 12h30 — **Oral Presentations**

	Room 1. *Chairs : Mohamed Amine BEN SOUF*
11h – 11h15	**ID 42. Optimizing Rate Of Penetration in Drilling Operations with Metaheuristic Algorithm** *Abdelhamid Kenioua, Omar Djebili , Ammar Touati Brahim,*
11h15 – 11h30	**ID 52. Solving A Green Vehicle Routing Problem using an Improved population-based Simulated Annealing algorithm** *Abir Amira, Ali Helali, Najeh Ben Guedria*
11h30 – 11h45	**ID 45. Comparison of turbulence models on rotating wheels** *Frifita Zied, Helali Ali, Najeh Ben Guedria*
11h45 – 12h00	**ID 39. Study of a car suspension system under uncertainties** *Ahmed Ghorbel, Mouna Hadj Kacem, Dorra Ben Hassen, Abdelkhalak El Hami, Lassâad Walha, Mohamed Haddar*
12h00 – 12h15	**ID 83. Dynamic behaviour of a car gearbox under gasoline engine excitations** *Amira HATTAY, Ahmed HAMMAMI, Atef HMIDA, Fakher CHAARI, Mohamed HADDAR*
12h15 – 12h30	**ID 37. Formation of boride layers on C35 steel and growth kinetics** *Alaeddine Kaouka, Sami Zidelmel*

	Room 2. *Chairs : Hanen JRAD & Taissir HENTATI*
11h – 11h15	**ID 16. Numerical investigation on sheet shearing process of an elastoplastic metal material with damage model** *Marwa Allouch, Abir Bouhamed, Mondher Wali, Fakhreddine Dammak*
11h15 – 11h30	**ID 4. Numerical investigation on performance of FGM dental implant to enhance biocompatibility** *Sameh Elleuch, Hanen Jrad, Mondher Wali, Fakhreddine Dammak*
11h30 – 11h45	**ID 6. Characterization and identification of 5083 aluminum alloy behavior: experimental and numerical investigations** *Abir Bouhamed, Hanen Jrad, Mondher Wali, Fakhreddine Dammak*
11h45 – 12h00	**ID 2. Non-linear behavior of smart magneto-electroelastic hyperboloid shell** *Hajer Ellouz, Hanen Jrad, Abir Bouhamed, Mondher Wali, Fakhreddine Dammak*
12h00 – 12h15	**ID 86. A brief analysis of the literature on the use of artificial intelligence and machine learning in the manufacturing system** *HASSAN Aicha , TRIKI Hager, TRABELSI Hassen , HADDAR Mohamed*
12h15 – 12h30	**ID 59. Frequency response and modal parameters of sandwich composite with debonding under random vibration excitations** *Sirine Ben Ameur, Ahmed Yaich, Abdelkahalk Elhami, Moez Beyaoui, Mohamed Haddar*

	Room 3. *Chairs : Riadh CHAARI*
11h – 11h15	**ID 75. Statistical Modelling of the Relationship between Clay Content, Water Content and Compression Strength of Moulding Sand in Green Sand Casting** *Dorsaf KHALIFA, Foued MZALI*
11h15 – 11h30	**ID 73. Effect of gear damage on mesh damping ratio** *Nourhaine Yousfi, Bacem Zghal, Ali Akrout, Lassaad Walha, Mohamed Haddar*
11h30 – 11h45	**ID 72. Study of the effect of mould sand properties variation on the severity of metal penetration defect: An industrial case study** *Dorsaf KHALIFA, Foued MZALI*
11h45 – 12h00	**ID76. Study of the mechanical behavior of polypropylene reinforced with Posidonia fiber** *Ichrak.Hammoudi, Montassar.Zrida, Hassen Trabelsi, Ahmed Hichem.Hamzaoui*
12h00 – 12h15	**ID 78. Integration of artificial intelligence in the robust and reliable design of complex systems: Application on the Macpherson active suspension case** *Fatma Hmida, Amir Guizani, Hassen Trabelsi, Mohamed Haddar*
12h15 – 12h30	**ID 77. Early integration of simulation into complex systems design process** *Rawnak Omar , Fathi Djemal, Hassen Trabelsi, Mohamed Haddar*

12h30 – 14h — **Lunch**

Monday 20 / 03 / 2023 – Afternoon

14h – 15h00	Plenary Sessions

14h00– 14h30 **ONLINE Plenary Session 4** *Chair: Professor Anas BOUGUECHA*

Professor ELHEM GHORBEL

Université de Cergy-Pontoise / France.

Laboratory of Mechanics and Materials of Civil Engineering.

Link: https://meet.google.com/bsv-mnfn-yso

14h30 – 15h00 **ONLINE Plenary Session 5** *Chair: Professor Lassaad WALHA*

Professor Ahmed KOUBAA

Professor at UQAT (Université du Québec en Abitibi-Témiscamingue) /Canada

Biomechanics laboratory

Link: https://meet.google.com/bsv-mnfn-yso

15h00 – 15h30	Coffee Break

15h30 – 19h15	Oral Presentations

	Room 1. *Chairs: Ahmed. HAMMAMI & Dhouha TOUNSI*
15h30 – 15h45	**ID 46. A sensitivity study of BGA geometrical parameters based on electro-thermal fatigue analysis** *Ghenam Sinda, Elhami Abdelkhalak, Gafsi Wajih, Akrout Ali, Haddar Mohamed*
15h45 – 16h00	**ID 31. Microstructural investigation of CuZn40Pb2 brass: Effects of the isothermal heat treatment** *Souhir Hammami, José Gregorio La Barbera-Sosa, Fahmi Chaari, Tarik Sadat, Bassem Zouari, Laurent Dubar, Riadh Elleuch*
16h00 – 16h15	**ID 82. Numerical investigation of punch radius and shape effects on the formability of coated Aluminum sheet in deep drawing** *Mariem Abdennadher, Anas Bouguecha, Eugen Stockburger, Hendrik Wester, Bernd-Arno Behrens, Riadh Elleuch*
16h15 – 16h30	**ID 87. A review of the integration of machine learning in the green supply chain** *Souhir Maalej, Hager Triki, Hassen Trabelsi, Mohamed Haddar*
16h30 – 16h45	**ID71. Preliminary design for the vibration analysis of a PCB model- An analytical approach** *Ghazoi HAMZA, Maher BARKALLAH, Jamel LOUATI, Mohamed HADDAR*
16h45 – 17h00	**ID 64. Investigation of the aerodynamic loads of horizontal axis wind turbines blade** *Rania Maktouf, Majdi Yangui , Rachid Nasri, Mohamed Haddar*
17h00 – 17h15	**ID 79. Free vibration analysis of laminated plates** *Khaoula chiboub, Majdi Yangui, Slim Bouaziz, Mounir Ben Amar, and Mohamed Haddar*
17h15 – 17h30	**ID 30. CFD based performance study of a convex curved solar air heater provided with greater curvature angle** *Amin Ben Mabrouk, Hassene Djemel, Moez Hammami, Mounir Baccar*
17h30 – 17h45	**ID 47. Développement des pots biodégradables à pourvoir fertilisant à partir des résidus de l'industrie de bois** *Fatma Bali, Ahmed Koubaa, Flavia Braghiroli, Mohamed Khlif*
17h45 – 18h00	**ID 66. 3D printed bio-based sandwich with an anti-trichiral lattice: Bending properties and failure mechanisms** *A. Hamrouni, J.L. Rebiere, A. El Mahi, M. Beyaoui et M. Haddar*
18h00– 18h15	**ID 20. CFD modeling of roughened Solar Air Heater having C- shaped ribs in turbulent flow** *Amin Ben Mabrouk, Hassene Djmel, Moez Hammami, Mounir Baccar*
18h15 – 18h30	**ID 38. Biocomposite with interleave viscoelastic layer under bending fatigue loading** *Firas Meddeb, Abderrahim El Mahi, Jean Luc Rebiere, Mohamed Amine Ben Souf , Mohamed Haddar*
18h30 – 18h45	**ID 65. Tensile properties and damage mechanisms of a 3D printed bio-sourced material with a rectangular shape** *A. Hamrouni, J.L. Rebiere, A. El Mahi, M. Beyaoui et M. Haddar*

Monday 20 / 03 / 2023 – Afternoon

15h30 – 19h15 — **Oral Presentations**

Room 2.

Chairs: Moez BEYAOUI & Omar AYADI

15h30 – 15h45	**ID 84. Wire-Arc Additive Manufacturing of aluminum alloy components: Impact of the heat input on the mechanical properties** *F.Makni, E. Ben Zina, R.Elleuch*
15h45 – 16h00	**ID 9. Free vibrational behavior of FG-CNTRC cylindrical shell based on the DDT with thickness stretching** *Hana Mellouli, Hanen Mallek, Mondher Wali, Fakhreddine Dammak*
16h00 – 16h15	**ID 7. Post-buckling of shear deformable nanocomposite panels** *Souhir Zghal, Najah Joueid, Fakhreddine Dammak*
16h15 – 16h30	**ID 21. Static analysis of FG-CNTRC skew plates** *Safi Kalleli, Abdesslam Hajlaoui, Fakhreddine Dammak*
16h30 – 16h45	**ID 5. Buckling of graded porous metal/ceramic plates in thermal environment** *Najah Joueid, Souhir Zghal, Fakhreddine Dammak*
16h45 – 17h00	**ID 8. On prediction of 3D bending strain accounting for through-the-thickness stretching of FG-CNTRC cylindrical panel** *Hanen Mallek, Hana Mellouli, Mondher Wali, Fakhreddine Dammak*
17h00 – 17h15	**ID 69. Tribological, micromechanical and structural characterizations of PA66 composites filled Cu micro-particles** *Mabrouka AKROUT, Basma BEN DIFALLAH, Mohamed KHARRAT, Maher DAMMAK, António PEREIRA, Igor BDIKIN, Isabel DUARTE*
17h15 – 17h30	**ID 53. Prediction of lattice constant in ternary perovskites ABX3 with : Data-mining & Machine learning stad** *Ali Benghia, Soundous Touati, Zoulikha Hebboul, Aroua Guettaf, Mohamed Abdelilah Fadla*
17h30 – 17h45	**ID 62. Morphological and structural characterization of Zn-Ni electrodeposited coatings: Effect of sulfate bath parameters** *Faten Nasri, Dorra Trabelsi, Mohamed Kharrat, Maher Dammak, Florence Vacandio, Marielle Eyraud*
17h45 – 18h00	**ID 12. Manual assembly line balancing problem with constraint COVID 19: (SALBCOVID19P)** *Hager Triki, Zainab Tkitek*
18h00– 18h15	**ID 67. Finite Element Prediction of Mechano Electro-Chemical effect of pipeline Corrosion** *M.S. Feki, Sana Koubaa , Zoubeir Bouaziz , Radhi Abdelmoula*
18h15 – 18h30	**ID 68. Machine learning assessment versus Optimal Torque MPPT control of grid connected WCES** *Nabiha Brahmi , Maher Chaabene*
18h30 – 18h45	**ID 27. Numerical exploration of the hydraulics of a front axle dual tube automobile damper** *Amina Ben Abdelwahed, Charfeddine Mrad, Jamel Chakhari, Jamel Bessrour*

Room 3. ONLINE Session

Chairs: Hassen TRABELSI & Hajer TRIKI

Link: https://meet.google.com/bsv-mnfn-yso

15h30 – 15h45	**ID 43. Ductility, toughness, and tenacity of cellulose-polypropylene composites** *Khalil Abdelmoula, Sébastien Migneault, François Godard, Ahmed Koubaa*
15h45 – 16h00	**ID 57. Interface Behavior When Drilling GFRP/Al-based composites: Temperature Analysis** *B. Salem , A. Mkaddem, A. Jarraya*
16h00 – 16h15	**ID 48. Effect of nanofluids based-liquid optical filter on the performance of a concentrated photovoltaic system** *Monia Chaabane, Afef Jannen, Hatem Mhiri, Philippe Bournot*
16h15 – 16h30	**ID 28. Valorization of Mining Side Waste Marble as Substitution of Cement and Sand in manufacturing C25/30 Resistance Class …** *Mohammad Rafi Rafi, Elhem Ghorbel, Safiullah Omary, Amanullah Faqiri*
16h30 – 16h45	**ID 58. Dynamic modeling of the gear transmission for detecting the separate and simultaneous tooth fracture using the statistical process …..** *Rasheed M. Jorani, Maroua Haddar, Fakher Chaari, Mohamed Haddar*
16h45 – 17h00	**ID 18. Stability study with the dynamic equivalence approach of an Underwater Hull Cleaner Robot fitted with Two Manipulator Arms** *Saber Hachicha, Chiheb Zaoui, Helmi Abrougui, Issam Hamdena, Ahmed Mouhli, Habib Dallagi*
17h00 – 17h15	**ID 3. Effects of different environmental conditions on the mechanical characteristics of epoxy adhesives in order to be used for …..** *Khaoula Idrissa, Marco Lamberti, Aurélein Maurel-Pantel, Frédéric Lebon, Noamen Guermazi*
17h15 – 17h30	**ID 32. Effect of bleaching treatment on composite reinforced by flax fibers blended with Poly (Lactic Acid)/Poly (Butylene Succinate) …** *Nihel Ketata, Noamen Guermazi, Yves Grohens, Bastien Seantier*
17h30 – 17h45	**ID 60. Numerical modeling of vacuum-assisted resin infusion process** *Houssem Cherif, Saouab Abdelghani, Khawla Essasi, Abdelkhalak El Hami, Anas Bouguecha, Mohamed Haddar*
17h45 – 18h00	**ID 80. Torsional load influence on the bolt joint selfloosening at the resonant frequency** *Olfa Ksentini, Maroua Hammami, Nabih Feki, Mohamed Slim Abbes and Mohamed Haddar*
18h00 – 18h15	**ID 85. Application of lean management methods in health care sector: case study of Tunisian private polyclinic** *Mouna Elarbi, Omar Ayadi, Eya Montassar and Faouzi Masmoudi*
18h15 – 18h30	**ID 44. Coupled Phase Field mo**del for brittle fracture *Imen Messaoudi, Hanen Mallek, Hana Mellouli, Jamel Mars, Mondher Wali, Fakhreddine Dammak*
18h30 – 18h45	**ID 74. Hygroscopic expansion of short alfa fiber in composite material: effect of the surrounding matrix** *Rawdha Kessentini, Sofiene Helaili, Olga Klinkova*
18h45 – 19h00	**ID 3. Numerical investigation of the effect of load direction on stress distribution in dental prostheses** *Hanen Jrad, Sameh Elleuch, Mondher Wali, Fakhreddine Dammak*
19h00 – 19h15	**ID 26. Effect of normal load on tribological behaviour of nano-sized beta phase silicon nitride** *Amine Charfi, Mohamed Kharrat, Mohd Farooq Wani, Maher Dammak*

Thursday 21 / 03 / 2023

8h30 – 110h00	**Oral Presentations**

	Room 1. *Chairs: Hamdi HENTATI & Majdi YANGUI*
8h30 – 8h45	**ID 1. Structural, morphological, optical and dielectric properties of sodium bismuth titanate ceramics** *Najah Rhimi, Elkebir Hlil, Jemai Dhahri*
8h45 – 9h00	**ID 10. Modeling Laser-Metal Interaction In Selective Laser Melting** *Mehdi Abdi, Houda Eloukabi, Mahfoudh Ayadi*
9h – 9h15	**ID 40. Active control of quarter car using Fuzzy and PID controllers: A comparative study** *Hadhemi Moussa, Khaoula Hergli, Najeh Ben Guedria*
9h15 – 9h30	**ID 55. Optimization of job shop scheduling problem with noise consideration** *Sara Zaidi, Hichem Hassine, Najeh Ben Guedria*
9h30 – 9h45	**ID 25. Gear damage effect on mesh damping ratio using the wavelet transform** *Nourhaine Yousfi, Bacem Zghal, Ali Akrout, Lassaad Walha, Mohamed Haddar*
9h45 – 10h00	**ID 88. Phase-field modeling of flat and cylindrical indentation in brittle fracture** *Yosra Kriaa, Yassine Harsi, Bassem Zouari, Radhi Abdelmoula*
10h – 10h15	**ID 23. Finite element simulation of a polycrystalline matrix with brittle particles for analyzing damage initiation in a metal matrix ….** *M. Dammak, Y. Charles, M. Gasperini*
10h15 – 10h30	**ID 34. Robustness of a complex system: double-stage gearing system, with GPC and MC methods** *Mouna Hadj Kacem, Hassen Trabelsi, Khalil Dammak, Abdelkhalak EL Hami, Lassaad Walha, Mohamed Haddar*
10h30 – 10h45	**ID 63. Structural characterization of electrodeposited Ni coatings filled with graphite or MoS2 particles** *Dorra Trabelsi, Faten Nasri, Mohamed Kharrat, Maher Dammak, Marielle Eyraud, Florence Vaccandio*
10h45 – 11h00	**ID 17. Numerical investigation on SPIF process of elastoplastic Fe-TiB2 composite** *Manele Dammak, Abir Bouhamed, Hanen Jrad, Fakhreddine Dammak*

	Room 2. *Chairs: Nabih FEKI & Amir GUIZANI*
8h30 – 8h45	**ID 41. Identification damping ratio of a spur gear pair system with backlash including a time varying loading** *Nourhaine Yousfi, Bacem Zghal, Ali Akrout, Lassaad Walha, Mohamed Haddar*
8h45 – 9h00	**ID 35. Contribution to conditional maintenance by vibration analysis Mechanical failures and proposed solutions** *Magraoui Rabah, Ouali Mohammed*
9h – 9h15	**ID 29. Numerical Investigation of Bulging Factor and Stress Intensity Factor of Cracks in Aircraft Fuselage Structures** *Maher Bouazizi, Ahmed F Zayati, Mohamed Soula,Tarek Lazghab*
9h15 – 9h30	**ID 19. A new approach to solve the mutual exclusion constraints problem for discrete event systems with disturbances-application …..** *Syrine Bouazza, Said Amari, Hichem Hassine, Maher Barkallah, Mohamed Haddar*
9h30 – 9h45	**ID 22. Numerical Parametric study of heat sink filled with multiple phase change materials** *Maissa Bouguila, Mohamed Amine Ben Souf, Abdelkhalak Elhami, Mohamed Haddar*
9h45 – 10h00	**ID 13. Comparative study of fatigue assessment of defective material based on affected depth approach** *Marwa Youssef, Anouar Nasr*
10h – 10h15	**ID 70. Surface modification effect on wear behavior of AISI P20 steel** *Wissal Yangui, Mouna Kallel, Amir Bahri and Khaled Elleuch*
10h15 – 10h30	**ID 61. Effect of Free Volume Activation on the Nanoindentation Behaviors in Zr-based Bulk Metallic Glass** *Sami Bouzayeni, Fathi Gharbi , Tarek Benameur*
10h30 – 10h45	**ID 15. Acoustic emission analysis of glass/epoxy laminate damage mechanisms** *Hana Driss,Abderrahim El Mahi, Mourad Bentahar, Moez Beyaoui, Mohamed Haddar*
10h45 – 11h00	**ID 89. Challenges and Solutions for Improving Engineering Data Exchange in Automotive Welding Processes** *Souha Boussema*

	Room 3. *Chairs: Fathi Djemal &,Mariam MILADI*
8h30 – 8h45	**ID 11. Réalisation d'un prototype de pliage des treillis de pylones** *Mohamed Faouzi Karoui, Walid Gharsalli, Iheb Ben Oun, Anis Ben Jemma*
8h45 – 9h00	**ID 54. Numerical study of water hammer in a non-homogeneous hydraulic system: Effect of maneuvering time and material behavior …..** *Lazhar Ayed, Oussama Choura, Zahreddine Hafsi, Sami Elaoud*
9h – 9h15	**ID 56. On the relationship between 3D printing parameters, porosity, and mechanical behavior in a Carbon Fiber Reinforced Polymer** *Sirine Ammar, Boutheina Ben Fraj, Hamdi Hentati, Mounir Ben Amar, Abdelghani Saouab, Mohamed Haddar*
9h15 – 9h30	**ID 14. Numerical heat transfer of rectangular fins for different conditions using the Finite Volume Method** *Imene Bennia, Samah Lounis*
9h30 – 9h45	**ID 36. Numerical investigation into the effects of using high curvature angle in roughened concave curved solar air heater with ……** *Amin Ben Mabrouk, Hassene Djemel, Moez Hammami, Mounir Baccar*
9h45 – 10h00	**ID 24. Controlling factory 4.0 manufacturing systems under mutual exclusion constraints using Min-Plus algebra** *Rajah J, Amari S, Tebani K, Barkallah M, Haddar M*
10h – 10h15	**ID 81. Simulation of the experimental procedure of measuring the scattering matrix of a duct element containing a porous material** *Hanen Hannachi, Hassen Trabelsi, Mohamed Taktak, Mabrouk Chaabne, Mohamed Haddar*
10h15 – 10h30	**ID 49. Formal modeling of obsolescence-reliability-maintainability and availability couplings** *Sahar Karaani, Mariem Besbes, Marc Zolghadri, Maher Barkallah, Mohamed Haddar*
10h30 – 10h45	**ID 90.A phase-field method for computational modeling of brittle fracture in heterogeneous composites** *Yosra Kriaa, Bassem Zouari*

11h – 11h30	**Closing Ceremony**