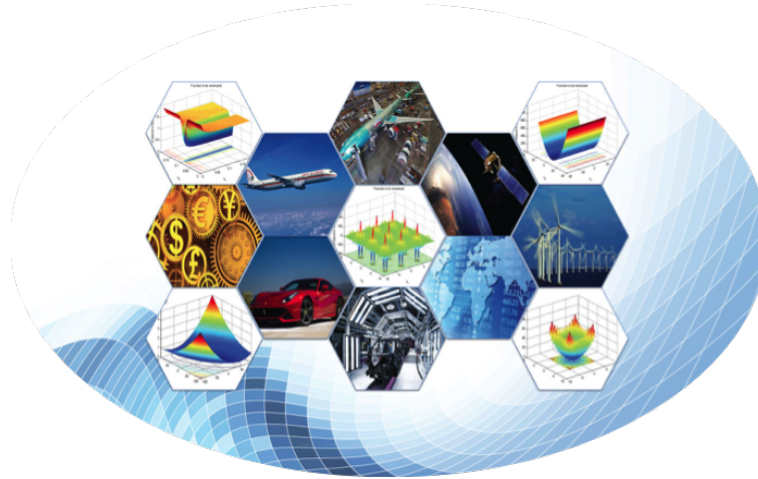


SULTAN MOULAY SLIMANE UNIVERSITY NATIONAL SCHOOL OF APPLIED SCIENCES

The 6th EDITION of the INTERNATIONAL CONFERENCE on OPTIMIZATION and APPLICATIONS

ICOA'2020



20th – 21th April 2020

USMS | BENI MELLAL, MOROCCO

The 6th Edition of the International Conference on Optimization and Applications (ICOA'2020) provides a high-level international forum and an excellent venue for scientists, researchers, academic faculties, students, industry leaders, and others in the fields of optimization to present, discuss and publish their recent research results and approaches.

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Prof. Dr. Hanaa Hachimi
Prof. Dr. Said Melliani
Prof. Dr. El Mostapha Rakib
Prof. Dr. Mohammed Kaicer
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TECHNICAL PROGRAM

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Welcome Message from the Conference Chairs

Welcome to the 6th IEEE International Conference on Optimization and Applications (ICOA2020), which is held at USMS, Beni Mellal, Morocco on April 20 - 21, 2020. The conference is organized by ENSA of Beni Mellal, Sultane Moulay Slimane University, Morocco. The ICOA2020 is Technically Supported by the International IEEE Advancing Technology of Humanity and the IEEE Moroccan Section. ICOA2020 is a forum for depicting excellent results and new challenges on the optimization and its theoretical and applicative aspects. It brings together industrial and academic experts who are proficient in various engineering, design and research fields. This conference will provide an exceptional opportunity for the academic and industrial communities to address new challenges, share solutions and discuss future research guidance in this thematic. ICOA2020 received submissions from many countries. Many people have collaborated and worked hard to produce a successful ICOA2020 conference. Thus, we would like to thank all the authors for their interest to this conference, the scientific committee members, who carried out the most difficult work by carefully evaluating the submitted papers. Thanks to Publicity, Organizing and all Committees members for their assistance in making this conference a success. Our special thanks to our distinguished Keynote Speakers who have agreed to address the conference attendees. We are also grateful to all our partners and sponsors for their help and support of our conference. Welcome to Beni Mellal, Morocco and we hope that you will enjoy the conference program.

Conference Chairs

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Many Thanks!
 The involvement and sponsorship of our sponsors plays a major role in the success of our event.
 The ICOA'2020 sincerely thanks all the structures who have contributed to the success of this conference.

Press



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LIST OF TOPICS

The ICOA2020 Conference Seeks Original and High Quality Papers

Tools and Methods	Fields and Areas
Artificial Intelligence	Electric, Electronic engineering
Learning Algorithms	Embedded Systems
Combinatorial Optimization and Mathematical Programming	Telecommunication Engineering
Numerical Methods	Robotic
Linear and Non-linear Programming	Control and Mechatronics
Multiobjective Programming	Physics
Parallel and Distributed Computation	Civil Engineering
Bio-inspired Computations and Neural Networks	Smart Grids and energy systems
Fuzzy systems	Smart city and traffic simulation
Evolutionary Computing	Aerospace, Naval and Marine Engineering
Metaheuristic Optimization Algorithms	Transportation, Logistic Engineering
Hybrid Algorithms	Software and Computer Engineering
Dynamic Optimization	Big data
Continuous Optimization	Scheduling and Data mining
	Bio mathematics
	Automotive mechatronics
	Aviation

All accepted and presented papers will be published in IEEE Xplore Digital Library and indexed in Scopus.

Technical Program Overview

Monday 20 th		Tuesday 21 th	
09h00 - 09h30	Opening Ceremony	09h00 - 09h30	Keynote 3
09h30 - 10h00	Keynote 1	09h30 - 10h00	Keynote 4
10h00 - 12h00	MM1	10h00 - 12h00	TM1
14h00 - 14h30	Keynote 2	14h00 - 14h30	Keynote 5
14h30 - 16h30	MA1	14h30 - 16h30	TA1
	MA2		TA2
	MA3		TA3
	MA4	16h30 - 17h00	Closing Ceremony

MM/A: Monday Morning/Afternoon

TM/A: Tuesday Morning/Afternoon

Session	Topics	
MM	MM1	Big Data / Deep Learning
	MM2	Mathematics
	MM3	Physics
	MM4	Operational Research
MA	MA1	Computer Sciences
	MA2	Smart City / Renewable Energy
	MA3	Mechanics / Robotic / Telecommunication
	MA4	Control / Mechatronics
TM	TM1	Computer Sciences
	TM2	Electric/ Electronic
	TM3	Mathematics
	TM4	Operational Research
TA	TA1	Computer Sciences
	TA2	Physics
	TA3	Chemistry / logistic

Keynote Speakers



Monday 20th
09h30 - 10h00

KN 1: Prof. Dr. NAYYAR Anand

Duy Tan University, Vietnam

Internet of Medical Things and Artificial Intelligence Things

Session Chair: Prof. Dr. HACHIMI Hanaa



Monday 20th
14h00 - 14h30

KN 2: Prof. Dr. IBRAHIM Rosziati

UTHM University, Malaysia

A Software Testing Tool for Optimizing the Generation of Test Cases Automatically

Session Chair: Prof. Dr. GOUSKIR Mohamed



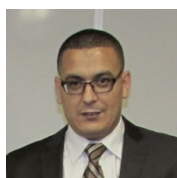
Tuesday 21th
09h00 - 09h30

KN 3: Professor PhD. Eng. Petrica VIZUREANU

Gheorghe Asachi Technical University of Iasi Romania

Characterization and Evaluation of New TiMo-based Alloys for Medical Application

Session Chair : Prof. Dr. AMINE Abdellah



Tuesday 21th
09h30 - 10h00

KN 4: Prof. Dr. LAKHOUIT Abderrahim

Sherbrooke University, Canada

Application of Fuzzy methods in sustainability

Session Chair : Prof. Dr. ZEMZAMI Maria



Tuesday 21th
14h00 - 14h30

KN 5: Prof. Dr. MASULLI Francesco

Chair of IEEE Italy

A Machine Learning Approach to Stream Data Forecasting for Urban Traffic Forecasting and Optimization

Session Chair : Prof. Dr. ELHISSI Youmna

Sessions Content

SESSION Monday Morning (MM)

MM1: Big Data / Deep Learning Monday , April 20-2020 (10h00 to 12h00) Session Chairs : Prof. Dr. ADDAIM Adnane / Prof. Dr. ANTARI Jilali Prof. Dr. GOUSKIR Mohamed		
10h00-10h15 ID:112	Aafaf Beljadid, Adil Tannouche and Abdessamad Balouki	Application of deep learning for the detection of default in fabric texture
10h15-10h30 ID:132	Alaeddine Boukhalfa, Abderrahim Abdellaoui, Hmina Nabil and Habiba Chaoui	Network Traffic Analysis using Big Data and Deep Learning Techniques
10h45-11h00 ID:14	Imane Chakour, Yousef El Mourabit, Cherki Daoui and Mohamed Baslam	Multi-Agent System Based on Machine Learning for Early Diagnosis of Diabetes
11h00-11h15 ID:33	Mahmoud Artemi and Haiming Liu	Image Optimization using Improved Gray-Scale Quantization for Content-Based Image Retrieval
MM2: Mathematics Monday , April 20-2020 (10h00 to 12h00) Session Chairs : Prof. Dr. BOUIKHALENE Belaid / Prof. Dr. CHADLI Lalla Saadia Prof. Dr. MASLOUHI Mostafa		
10h00-10h15 ID:13	Hicham Azizi and Abdeslam Kadrani	An Inexact Solution Approach for the Mathematical Program with Complementarity Constraints
10h15-10h30 ID:36	Nada Tassi, Mohamed El Kouri, Abderrahmane Bakkali and Lahcen Azrar	Micromechanical modeling of non-ageing fractional viscoelastic reinforced composites
10h30-10h45 ID:64	Hafida Atti, Said Melliani, Mohamed Oukessou and Lalla Saadia Chadli	Dual intuitionistic fuzzy linear systems
10h45-11h00 ID:65	Idris Bakhadach, M'Hamed Elomari, Said Melliani, Lalla Saadia Chadli and Hamid Sadiki	Approximation of a fuzzy number by a fuzzy element of fuzzy algebra
11h00-11h15 ID:67	Abdelati El Allaoui, Said Melliani and Lalla Saadia Chadli	A mathematical fuzzy model to giving up smoking
11h15-11h30 ID:97	M'Barek Iaousse, Amal Himmou, Zouhair El Hadri and Yousfi El Kettani	On the Computation of the Correlation Matrix Implied by a Recursive Path Model

MM3: Physics Monday , April 20-2020 (10h00 to 12h00) Session Chairs : Prof. Dr. BELHOUIDEG Soufiane / Prof. Dr. OUFNI Lhoucine Prof. Dr. AMINE Abdellah		
10h00-10h15 ID:17	Mohamed Manoua, Tariq Janane, Otmane Abouelala, Mohammed Sajieddine, Mustapha Mabrouki, Abdelmajid Almagoussi and Ahmed Liba	Optimization of ZnO thickness for high efficiency of n-ZnO/p-Si heterojunction solar cells by 2D numerical simulation
10h15-10h30 ID:18	Hamza Badry, Lhoucine Oufni, Hmad Ouabi, Rabi Rabi and Hiroshi Iwase	Dose optimization of high dose rate brachytherapy for skin cancer treatment using Harrison-Anderson-Mick applicator
10h45-11h00 ID:68	Rabi Rabi, Oufni Lhoucine and Badry Hamza	A NUMERICAL STUDY OF INDOOR ^{222}Rn _AIR QUALITY IN A VENTILATED ROOM
11h00-11h15 ID:126	Mohamed Ounacer, Mohammed Sajieddine and Abdellatif Essoumhi	Annealing effect on cobalt-iron oxide : structural and hyperfine investigations
11h15-11h30 ID:127	Hamza Belbsir and Khalil El Hami	Adaptation of various explicit formulas for calculating Darcy-Weisbach friction factor to optimize the modeling of pressure drops during turbulent flow of phosphate slurry through the pipeline

MM4: Operational Research Monday , April 20-2020 (10h00 to 12h00) Session Chairs : Prof. Dr. HACHIMI Hanaa / Prof. Dr. BOUKLATA Bouchra Prof. Dr. BOUTALLINE Mohammed		
10h00-10h15 ID:29	Yassine Ouali and Ilham Oumaira	Reengineering ILE: towards a model for adapting the learning path
10h15-10h30 ID:40	Manal Hedid, Rachid Zitouni and Sami Labdai	Adaptive algorithm for solving the four index fuzzy transportation problem
10h30-10h45 ID:47	Mohammed Kaicer and Said Timjerdine	Detection of anomaly in socio-economic databases, by Benford probability law
10h45-11h00 ID:60	Mustapha Elmouden, Mouhssine Chahbouni, Driss Amegouz and Said Boutahari	Geometric Tolerancing using the Jacobean torsor
11h00-11h15 ID:63	Moulay Youssef Smaili and Hanaa Hachimi	Metaheuristic for optimizing targeted offers in Direct Marketing

SESSION Monday Afternoon

MA1: Computer Sciences Monday, April 20-2020 (14h30 to 16h30) Session Chairs : Prof. Dr. EL AYACHI Rachid / Prof. Dr. IDRISSEI Najlae Prof. Dr. AIT DAOUD Rachid		
14h30-14h45 ID:22	Meryem Ameer, Cherki Daoui and Najlae Idrissi	Fast Markovian Images Segmentation
14h45-15h00 ID:24	Yassine Dabachine, Hamza Taheri, Mohamed Biniz, Belaid Bouikhalene and Abdessamad Balouki	Optimization of Aircraft Operations on Airport Surface
15h00-15h15 ID:25	Abdullah Alwabli, Ivica Kostanic and Saeed Malky	STATIC ROUTE OPTIMIZATION FOR WASTE COLLECTION IN MECCA CITY
15h15-15h30 ID:35	Khawla Asmi, Dounia Lotfi and Mohamed El Marraki	Dissimilarity measure for community discovery in dynamic networks
15h30-15h45 ID:54	Ichrak Khouliqi and Najlae Idrissi	Segmentation and Classification of Cervical cancer

MA2: Smart City / Renewable Energy Monday, April 20-2020 (14h30 to 16h30) Session Chairs : Prof. Dr. AZZOUZI Salma / Prof. Dr. KAICER Mohammed Prof. Dr. AIT YACINE Fatiha		
14h30-14h45 ID:15	Abdelkhalik Aboulouard, Sara Rbihi, Youssef Najih, Mustapha Adar, Mohammed Anas El Abbassi, Ahmed Jouaiti and Benachir Elhadadi	Numerical simulation of dye-sensitized solar cells performance for local natural dyes
14h45-15h00 ID:16	Tariq Jannane, Mohamed Manoua, Ahmed Liba, Nejma Fazouan, Mustapha Mabrouki, Abdelmajid Almaggoussi, Ahmed El Hichou and Ghizlan El Hallani	Sol aging time optimization to improve ZnO coatings properties for photovoltaic applications
15h00-15h15 ID:28	Souad Touairi and Mustapha Mabrouki	Mechatronic modeling and control of energy recovery in motorcycle tires
15h15-15h30 ID:50	Chakib El Mokhi and Adnane Addaim	Optimal Substation Location Of A Wind Farm Using Different Metaheuristic Algorithms
15h30-15h45 ID:147	Youssef Ait El Kadi, Baghli Fatima Zahra and Yassine Lakhel	Energy quality optimization in smart grids: Faults monitoring by the space vector signature analysis method

MA3: Mechanics / Robotic / Telecommunication Monday, April 20-2020 (14h30 to 16h30) Session Chairs : Prof. Dr. CHERRADI Bouchaib / Prof. Dr. BOUMEZZOUGH Ahmed Prof. Dr. FAOUZI Hassan		
14h30-14h45 ID:130	Bessem Debich, Ahmed Yaich, Abdelkhalak Elhami, Wajih Gafsi, Lassaad Walha and Mohamed Haddar	Coupling PCM-based Heat Sinks finite elements model for mechatronic devices with Design Optimization procedure
14h45-15h00 ID:9	Brahim Moudoud, Hicham Aissaoui and Mohammed Diany	Robust trajectory tracking control based on sliding mode of Differential Driving Four-Wheeled Mobile Robot
15h00-15h15 ID:145	Mohamed El Amrani, Hamid Garmani, Driss Ait Omar, Mohamed Baslam and Brahim Minaoui	Mobile Devices: A Pricing Approach to Optimize Transmission Strategies
15h15-15h30 ID:19	Souad Touairi and Mustapha Mabrouki	Optimization of Harvester System in embedded vehicle systems via Bond Graph modeling algorithm

MA4: Control / Mechatronics Monday, April 20-2020 (14h30 to 16h30) Session Chairs : Prof. Dr. EL KHECHAFI Mariam / Prof. Dr. MALAOUI Abdessamad Prof. Dr. ZEMZAMI Maria		
14h30-14h45 ID:3	Karim Yousra and Cherkaoui Abdelghani	Human and Organizational Factors Maturity Model Development and Implementation in Construction Industry Using Fuzzy Comprehensive Evaluation Method
14h45-15h00 ID:30	Samya Belarhzal, El Mostapha Boudi, Aziz Bachir and Yassine Amadane	Analysis of Profile Shift Factor's Effect on Bending Stress of Spur gears Using The Finite Element Method
15h00-15h15 ID:148	Youssef Najih, Mustapha Adar, Abdelkhalik Aboulouard, Zakaria Khaouch, Jamaa Bengourram, Mustapha Zekraoui and Mustapha Mabrouki	Mechatronic Control Model of a Novel Variable Speed Wind Turbine Concept with Power Splitting Drive Train: A Bond Graph Approach

SESSION Tuesday Morning

TM1: Computer Sciences Tuesday , April 21-2020 (10h00 to 12h00) Session Chairs : Prof. Dr. EL ABDALLAOUI Abderrahim / Prof. Dr. CHAOUI Habiba Prof. Dr. ZEMZAMI Maria		
10h00-10h15 ID:55	Muktar Danlami, Sapiee Jamel, Sofia Najwa Ramli and Siti Radhiah Megat Azahari	Comparing the Legendre Wavelet filter and the Gabor Wavelet filter For Feature Extraction based on Iris Recognition System
10h15-10h30 ID:66	Anass Barodi, Abderrahim Bajit and Mohammed Benbrahim	An Enhanced Approach in Detecting Object Applied to Automotive Traffic Roads Signs
10h30-10h45 ID:70	El Houssaine Hssayni and Mohamed Ettaouil	New Approach to Face Recognition Using Co-occurrence Matrix and Bayesian Neural Networks
10h45-11h00 ID:129	Assia Arsalane, Abdessamad Klilou, Nouredine El Barbri and Abdelmoumen Tabyaoui	Artificial vision and embedded systems as alternative tools for evaluating beef meat freshness
11h00-11h15 ID:152	Issam Qaffou	Optimization of the Process of Parameter Adjustment: Image Processing as a Case Study

TM2: Electric/ Electronic Tuesday , April 21-2020 (10h00 to 12h00) Session Chairs : Prof. Dr. MADINI-ZOUINE Zhou / Prof. Dr. BAJJOU Omar Prof. Dr. AMINE Abdellah		
10h00-10h15 ID:26	Soukaina El Daoudi, Loubna Lazrak and Mustapha Ait Lafkih	Upgraded sensorless direct torque control using MRAS-sliding mode observer for asynchronous motor
10h15-10h30 ID:73	Mostapha Oulcaid, Hassan El Fadil and Zakariae El Idrissi	LandS-inspired algorithm for MPPT purpose
10h30-10h45 ID:121	Siham Lakrih, Bouchra Mekkaoui, Latifa Laallam and Ahmed Jouaiti	Electronic and photoelectronic properties of N-(5-indazolyl)-arylsulfonamides molecules: DFT / TD-DFT study
10h45-11h00 ID:150	Zakaria Massaq, Abdelouahed Abounada, Abdenabi Brahmi and Mohamed Ramzi	Control of PV-Battery Based Hybrid Water Pumping System Under Sudden Irradiance and Speed Changes
11h00-11h15 ID:151	Malika Ouhadou, Aumeur El Amrani and Choukri Messaoudi	Evaluation of Radiometric Performances for SMD LEDs under different injection powers supply
11h15-11h30 ID:155	Mohamed Aazi, El Houssine Atmani, Najma Fazouan and Ibrahim Biziz	Ab-initio Study of Electronic, Optical and Electrical properties of TiO ₂ using GGA and mBJ approximations

TM3: Mathematics		Tuesday , April 21-2020 (10h00 to 12h00)
Session Chairs : Prof. Dr. LAKHOUT Abderrahim / Prof. Dr. MELLIANI Said		
Session Chairs : Prof. Dr. EL BAZI Ismail		
10h00-10h15 ID:78	Bouchra Ben Amma, Said Melliani and Lalla Saadia Chadli	Intuitionistic Fuzzy Partial Functional Differential Equations with Integral Boundary Conditions
10h15-10h30 ID:92	Said Melliani, Abdellah Taqbibt, M. chaib and Lalla Saadia Chadli	Fixed point in colombeau algebra
10h30-10h45 ID:96	Said Idrissi, El Houssaine Tissir, Ismail Boumhidi and Nabil EL Fezazi	Stability analysis and H_∞ performance for nonlinear T-S fuzzy systems with time-varying delay
10h45-11h00 ID:106	M'Hamed Elomari, Idris Bakhadach, Said Melliani and Lalla Saadia Chadli	Fuzzy fractional neutral equation
11h00-11h15 ID:113	Bassour Mustapha	Solving pencil problem generalized using Cholesky like-decomposition for skew-Hamiltonian matrix

TM4: Operational Research		Tuesday , April 21-2020 (10h00 to 12h00)
Session Chairs : Prof. Dr. NACHAOUI Mourad / Prof. Dr. SAADI Youssef		
Prof. Dr. GOUSKIR Mohammed		
10h00-10h15 ID:72	Saloua Said, Hafida Bouloiz and Maryam Gallab	IDENTIFICATION AND ASSESSMENT OF RISKS AFFECTING SOCIOTECHNICAL SYSTEMS RESILIENCE
10h15-10h30 ID:75	Zakaria Chekoubi, Wajdi Trabelsi, Nathalie Sauer and Ilias Majdouline	The Integrated Production-Inventory-Routing Problem with remanufacturing under carbon cap-and-trade
10h30-10h45 ID:90	Brahim Jabir and Noureddine Falih	Digital agriculture in Morocco, opportunities and challenges
11h00-11h15 ID:133	Chaimae Mouncif	Blood collection supply chain management: A critical review and future perspective
11h15-11h30 ID:135	Amine Hadek, Hind Chaibate, Soumia Bakkali and Souad Ajana	Impact of Lean on the optimization of the professional insertion process of newly recruited engineers

SESSION Tuesday Afternoon

TA1: Computer Sciences		Tuesday, April 21-2020 (14h30 to 16h30)
Session Chairs : Prof. Dr. SAFI Said / Prof. Dr. TAZI El Bachir Prof. Dr. AIT YACINE Fatiha		
14h30-14h45 ID:157	Maria Zemzami, Norelislam El-hami, Nabil Hmina and Mhamed Itmi	A Proposal Of A Multi-agent Modeling Based On A Parallel Model Of The PSO Algorithm
14h45-15h00 ID:161	Nouhaila Adil and Halima Lakhbab	A Discrete Bat Algorithm for the Multi-Compartment Vehicle Routing Problem
15h00-15h15 ID:163	Mohamed Gouskir, Mohammed Boutalline and Mohammed Amine Ziyad	Automatic Analysis of Brain Tumor from Magnetic Resonance Images based on Geometric Median Shift
15h15-15h30 ID:164	Stefano Rovetta, Grazyna Suchacka, Alberto Cabri and Francesco Masulli	Feature selection: a multi-objective stochastic optimization approach
15h30-15h45 ID:165	Soukaina Sabir, Nadia Raissi and Mustapha Serhani	Chemotherapy for Tumors: a Study of Linear Optimal Control

TA2: Physics		Tuesday, April 21-2020 (14h30 to 16h30)
Session Chairs : Prof. PhD. Eng. Petrica VIZUREANU / Prof. Dr. RAHMANI Khalid Prof. Dr. BOUTALLINE Mohammed		
14h30-14h45 ID:128	Ghariba Bouazza, Mohamed Assou, El Houssine Chatri and Salah Souabi	Optimization by the Response Surface Methodology of Turbidity, Box-Behnken Plan
14h45-15h00 ID:137	Hajar Koukali, Hassan Latrache, Hafida Zahir, Soukaina Soufiani and Mostafa El Louali	Application of theoretical prediction to prevent the biocontamination of medical materials
15h00-15h15 ID:149	Abdelhamid El Boubekri, Sara Tillaoui, Mohammed Sajieddine, Mohammed Sahlaoui, Hassan Lassri and El Hocine Agouriane	Prediction of magnetocaloric and thermomagnetic properties of amorphous alloy Fe ₆₈ Cr ₁₂ Si ₈ B ₁₂
15h15-15h30 ID:154	Neda Hesam Mahmoudi Nezhad, Mohamad Ghaffarian Niasar, Cornelis Wouter Hagen and Pieter Kruit	Local versus Global Optimization of Electron Lens System Design
15h30-15h45 ID:156	Hanane Yaagoubi, Hamid Abouchadi and Mourad Taha Janan	Mathematical study on the relation of energy density and other parameters in the selective laser sintering of polyamide12 and their influences on the quality of the final produced part
15h45-16h00 ID:159	Zakariae Maatallah, Rachid El Amraoui and Hicham El Mghari	Numerical Simulation of a Micro Heat Pipe : Desing Optimization

TA3: Chemistry / logistic Tuesday, April 21-2020 (14h30 to 16h30) Session Chairs : Prof. Dr. OUASMI Nabila / Prof. Dr. EL OUFY Tarik Prof. Dr. ELHISSI Youmna		
14h30-14h45 ID:27	Ibtissam Baayyad and Naoual Semlali Aouragh Hassani	Optimization by genetic algorithm of an ice crystallization for a new hybrid desalination process
14h45-15h00 ID:76	Hayat El Ouafy, Latifa Amini, Said Zouitina, Anas Chraka, Amin Moubarik, Khalifa El Harfi, Mohamed Mbarki and Mohammed El Idrissi	Theoretical evaluation of ibuprofen and paracetamol by Fukui and Parr functions descriptors : DFT Study
15h00-15h15 ID:114	Aimen El Orche, Mustapha Bouatia, Mohamed Mbarki, Houda Labjar and Mohamed Maaouni	Coupling Mid Infrared Spectroscopy to mathematical and statistical tools for automatic classification, qualification and quantification of Argan oil adulteration
15h15-15h30 ID:166	Othman Cherkaoui Dekkaki and Nadia Raissi	Viability Analysis for a Stock-Capital Fishery Model

Beni Mellal City

The event will be held in Beni Mellal city, a wonderful place to be in.



Welcome!