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Program & useful information

http://iceere2018.com/

المركز الجهوي للإستثمار للجهة الشرقية
Centre Régional d'Investissement de la Région de l'Oriental

Académie Hassan II des Sciences et Techniques

Centre National pour la Recherche Scientifique et Technique

EST
المدرسة العليا للتكنولوجيا وجدة
ÉCOLE SUPÉRIEURE DE TECHNOLOGIE OUJDA

جامعة محمد الأول بوجدة
UNIVERSITE MOHAMMED PREMIER OUJDA

Contents

1st International Conference on Electronic Engineering and Renewable Energy (ICEERE-2018)
Saidia, Morocco
15-17 April 2018

Chair's Welcome Message

It is our great pleasure to welcome you to the First edition of the International Conference on Electronic Engineering and Renewable Energy (ICEERE-2018) which will be held from 15th to 17th April, 2018 in Saidia city, Morocco.

The ICEERE-2018 provides an international platform for electrical engineers and experts to highlight key issues and developments essential to the multifaceted field of electrical engineering systems and seeks to address multidisciplinary challenges in Information and Communication Technologies.

The conference has also a special focus on energy challenges for developing the Euro-Mediterranean regions by the application of the new technologies of renewable energy in agriculture activities and rural areas.

ICEERE 2018 is intended for academia, including graduate students, experienced researchers and industrial practitioners working in the fields of Electronic Engineering and Renewable Energy.

This event includes different kinds of presentations given by researchers and experts from the international community, including keynote speakers, special sessions, posters and tutorials. It covers a wide spectrum of topics as renewable energy, electronics, materials and devices applications, image and signal processing and Network &telecommunications.

The overwhelming success of ICEERE 2018 is doubtlessly the result of the commitment, perseverance, implication and hard work of different stakeholders, particularly, the Organizing Committee Members, Technical Program Committee members, keynote and invited talks speakers, technical sponsors and all the participants. We seize this opportunity to address them all our most sincere thanks and gratitude.

Last but not least, we wish all the participants in ICEERE 2018 a very successful and fruitful conference and a wonderful and enjoyable stay in the wonderful city of Saïdia.

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- **A. MEZGHEB**, Med First University, Morocco
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- **M. MHAMDI**, ENSA-Ghouribga, Morocco
- **B. SAAD**, ENSA-Fes, Morocco
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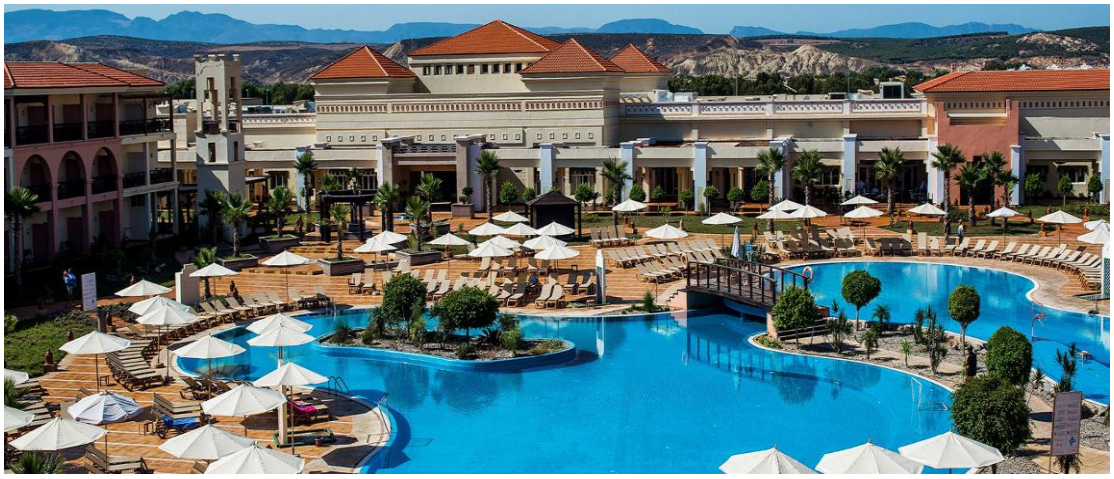
- **M. EL Hitmi**, FSO-Oujda, Morocco

ICEERE’2018 VENUE

Be Live Hotel 5* Saidia,Morocco



CONFERENCE SCHEDULE

TOPICS

Session I	**Solar energy-characterization and diagnostics**
Session II	**Solar Enegy- Control Systems for PV**
Session III	**Solar Energy Thermal**
Session IV	**Control of Wind Energy System**
Session V	**Energy Storage System and Control Management**
Session VI	**Hydrogen Production**
Session VII	**Electrical Machines and Power System**
Session VIII	**Nonlinear Control Systems**
Session IX	**Electronics**
Session X	**Materials and Devices Applications**
Session XI	**Image and Signal Prcessing**
Session XII	**Networks and Telecommunications**
Session XIII	**Wireless Networks and Information Systems**

Sunday, April 15th, 2018

17:30-19:00
Early registration

Monday, April 16th, 2018

8:30 - 9:15
Conference registration

9:15 - 9:45
Plenary Room
Opening ceremony

9:45 - 10:30
Plenary Room
Keynote Speaker 1
Jérôme LAUNAY

10:30 - 11:00
Break

11:00 - 11:45
Plenary Room
Keynote Speaker 2
Giuseppe Marco Tina

11:45 –13:00
Room I
Session IV

11:45 –13 :00
Room III
Session XI

11:30 -13:30
Room III
Session IX-2

13:30-14:30
Lunch

15:00 – 15:45
Plenary Room
Keynote Speaker 3
Omar ELMAZRIA

15:45 – 16:30
Plenary Room
Keynote Speaker 4
Filippos Farmakis

15 :00 – 16 :15
Room II
Session II-1

15 :00 – 16:30
Room I
Session XII-1

16:30 - 17:00
Break
Poster session I

17:00- 18:45
Room II
Session II-2

17:00- 18:45
Room I
Session XIII

17:00 – 18 :30
Room III
Session VIII

Tuesday, April 17th, 2018

8:30 - 9:00
Conference registration

9:00 - 9:45
Plenary Room
Keynote Speaker 5
Nacer M'sirdi

9:45 - 10:30
Plenary Room
Keynote Speaker 6
Adel Mellit

10:30 – 11:00
Break
Poster session II

11:00 – 11:45
Plenary Room
Keynote Speaker 7
Khalid RADOUANE

11:00 – 12:15
Room III
Session XII-2

11:45- 13:30
Room I
Session I

11:45-13:30
Room II
Session IX-1

12:15 – 13:00
Room III
Session V

13:30-14:30
Lunch

15:00-15:45
Plenary Room
Keynote Speaker 8
Mustapha JOUIAD

15:00-15:45
Room I
Session VI

15:45 – 16:30
Plenary Room
Keynote Speaker 9
Amine Bermark

15:45 – 16:30
Room II
Session X

16:30 – 17:00
Break

17:00 – 18:30
Room I
Session VII

17:00 -19:00
Room III
Session III

17:00 -18 :30
Room II
Session X

19:00 – 19:30
Plenary Room
Closing ceremony

ADVANCED PROGRAM OVERVIEW

ICEERE’2018 KEYNOTE SPEAKERS

Dr. Jérôme LAUNAY

LAAS- CNRS,Toulouse, France

Development of a lab-on-chip for the analysis of water toxicity and more specifically the detection of herbicides in water.

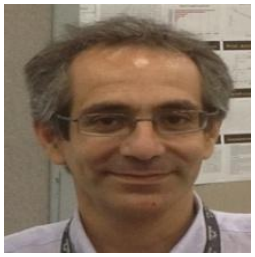
Monday, April 16, 2018
9 :45– 10:30

Abstract:

The present work was dedicated to the development of a lab-on-chip device for water toxicity analysis and more particularly herbicide detection in water. It consists in a portable system for on-site detection composed of three-electrode electrochemical microcells, integrated on a fluidic platform constructed on a glass substrate. The final goal is to yield a system that gives the possibility of conducting double, complementary detection: electrochemical and optical and therefore all materials used for the fabrication of the lab-on-chip platform were selected in order to obtain a device compatible with optical technology. The basic detection principle consisted in electrochemically monitoring disturbances in metabolic photosynthetic activities of algae induced by the presence of Diuron herbicide. Algal response, evaluated through oxygen (O2) monitoring through photosynthesis was different for each herbicide concentration in the examined sample. A concentration-dependent inhibition effect of the herbicide on photosynthesis was demonstrated. Herbicide detection was achieved through a range (blank – 1 µM Diuron herbicide solution) covering the limit of maximum acceptable concentration imposed by Canadian government (0.64 µM), using, for the stimulation of algal photosynthetic apparatus, an organic light emitting diode (OLED), having an emission spectrum adapted to algal absorption spectrum and assembled on the final system.

Biography

Jérôme LAUNAY, 42 years old, received the Engineering degree in electronics and microelectronics from the French "Institut National des Sciences Appliquées de Toulouse" (INSAT, France) in 1998 and his Master degree in microelectronic from the INSAT in 1998. He joined the French "Laboratoired'Analyse et d'Architecture des Systèmes" (LAAS) from the French "Centre National de la RechercheScientifique" (CNRS) in 1998 and received the PhD degree from the INSAT in 2001.Since 2006, as a lecturer at LAAS, he has been working on the integration of materials for microtechnological applications as well as on the study of physical, chemical and biological microsensors. His expertise field involves the technological integration and the study of bio-electro-chemical detection/transduction principles for the aqueous phase analysis at the microscale, aiming to health, environment and agri-business applications. His research interests concern the realisation of bio-electro-chemical microsensors, the integration of pH-metry techniques, the detection of bio-electro-chemical species in real media, the monitoring of cells cultures and/or single cell analysis.



Dr. Giuseppe Marco Tina

University of Catania, Italy

Monitoring of photovoltaic/thermal (PV/T) Power Plants

Monday, April 16, 2018
11 :00 – 11:45

Abstract:

Here are many reasons to monitor solar installations, such as: following up on the energy yield, assessing the solar system performance and timely identifying design weaknesses and/or malfunctions. These needs for monitoring fall into three main groups:

- User feedback,
- Performance verification
- System evaluation/diagnostic.

As a matter of fact, a good monitoring system allows the energy professional to easily determine that a system is running properly, and gives access to information that will help to troubleshoot a malfunctioning system. Consumers generally want to know the overall system production, along with cost savings or environmental benefit derived from that production. And nowadays, everyone wants that information in real time. Professionals need data pushed to them in the form of alerts to system malfunctions (via email or text message), along with remote access to real-time data that allow them to drill down to the performance of individual system components and sensors. An internet-accessible "dashboard" should permit the consumer to observe near real-time production and review the operating history. The monitoring system must flag clues to problems with the system. It becomes clear that to maximize effectiveness, advanced monitoring and more intelligent control should be brought together in one smart, connected device. An integrated control/monitoring system is the most powerful tool available to efficiently manage PV and solar thermal operations. Once the domain of expensive industrial supervisory control and data acquisition (SCADA) systems, these capabilities are now available in lower-cost, easy-to-use controllers. It has to be stressed the importance of real-time, live interaction with the PV and ST systems, with a complete and remotely accessible view of device status and history. From the monitoring point of view, a PVT plant can be viewed as two separate systems: a PV system and an ST thermal system. On this regard, basically, performance measurements of PVT collectors need to be in agreement with IEC 61215 for the electrical part and with EN 12975-2 for the thermal part. Yet, the close energetic interactions need to be taken into account, especially concerning the procedures and conditions of measurements. After a general overview of the proposed topic, focusing on PVT systems is provided.

Biography

MS, Electrotechnics Engineering, 1988 University of Catania (UdC) Italy; Ph.D., Electrotechnics Engineering, 1992, UdC. Currently he is associate Professor of Electric Energy Systems atUdC. National Academic Qualificationas Full Professor in 2013. Guest staff member in Newcastle University (U.K.) in 1992. From 1993 to 1996 he was in the industry with Agip Refineries and ST Microelectronics in Italy, as electrical engineer responsible for electrical facilities operation and maintenance. Associate researcher for INFN (National Institute for Nuclear Physics), sited in Catania, Italy in 2002. Responsible of Erasmus agreements: Universitè de Corse Pascal Paoli (France); University of Jules Verne (France); TEI of Western Greece (Greece); University of Jaén, Spain. Keynote speaker at 2012 IEEE EPE conference in

Iasi Romania. Invited speaker at ICEEAC (Algeria, 2013), WREC (UK, 2014), Splitech (HR 2016). Awarded in 2012 of the Diploma di Excelentia in teaching and research in power system from University "Stefan cel Mare", Suceava, Romania; best paper regular session in SEB 2014. Member of the Editorial Board of International Journal of Sustainable Energy (from 2015) and Helyion (from 2016). Co-author of 189 scientific papers: International journals (68), conference proceedings (118) and chapter of books (3), on the subject of electrical power systems and, in particular, on: analysis and modelling of Wind and Photovoltaic generation systems, DGSs (Dispersed Generation Systems), Energy and Ancillary Services Market, Stationary applications of Hydrogen Technology, photovoltaic/thermal (PV/T) systems, monitoring and diagnostic of photovoltaic systems. Responsible of power system research group and lab at UdC (6 y). He is a Member of the IEEE (20 y) and Power and Energy Society (12 y). Vice-president of the section of Catania of the Italian Federation AEIT (2010-2015). Coordinator of many regional and national research grants and research contracts.

Dr. Nacer MSIRDI

LSISUMR,Marseille, France

Energy Management Systems in Decentralized Power Systems

Tuesday, April 17, 2018
09:00 – 09:45

Abstract:

In this Keynote, we will first present the research objective of the SASV research group of the LSIS in Aix Marseille University. The HyRES (Hybrid Renewable Energy Sources), efficient EMS (Energy Management Systems) will be introduced for robust decentralized power grids that can cope with Mediterranean countries. Energy Management Systems when dealing with renewable energies, need robust predictions for the load demands satisfaction and for control of power production of each one of the sources (either active or not).

Biography:

Professor at Polytech Marseille and Aix Marseille University (AMU). He got the Phd in Electronics at ENSERG shool of INPG Grenoble (1983) and the Doctorat d'Etat in adaptive signal processing for non-stationary signals at the ENSIEG of INPG, Grenoble, in 1988 (Laboratory of Automatic of Grenoble). He was assistant professor, in signal processing and automatic control, in University of Paris 6 in 1987 and Professor at University of Versailles in 1993 where he created a master specialised in Mechatronic of Robotic Systems (Option MSR in the DEA of Robotics). His research was done in the Laboratory of Robotics of Paris. He was the dean of the research Laboratory of Robotics of Versailles (the LRV that he has created in 2000), from 2000 to 2004. From 2005 up to now, he is a research member of the LSIS (UMR CNRS 7296). His main research activities deal with adaptive and robust control, signal processing, diagnosis and observation for complex systems such as vehicles and robots. In 2009 he has created the VSAS research project on Variable Structure Automatic Systems (SASV), for fundamental research in automatic control and optimization of Variable Structure Systems with commutations. The considered class of systems (VSAS) is multi components (using multiple connected models with commutations) involving exchanges between several parts of the system and the environment. This the case in one of vehicules and mobile systems application and also the case of Systems with Multiple Renewable Energy Sources. Applications of his research activities deal in one hand on vehicles and autonomous robots applications and in another hand on MACSyME project (Modeling Analysis and Control of Systems with Multiple Energy sources). Recently he has proposed to create the MERIE group (Mediterranean Efficient and Renewable Intelligent Energies) in the RMEI network. The aim of this group (http://nkms.free.fr/MGEF/MGEN.htm) is to promote compatible and efficient renewable energies in Mediterranean countries. Recently NK M'Sirdi has created the HyRES Lab, an international collaboration

laboratory which includes up to 14 Mediterranean cooperating teams coming from 8 different countries (http://nkms.free.fr/MGEF/HyRESLab.htm).

Dr. Filippos Farmakis

University of Thrace, Greece

New technologies for the manufacture of Lithium-ion batteries

Monday, April 16, 2018
15:45 – 16:30

Abstract:

The last decades Lithium-ion batteries are widely considered as the energy storage systems appropriate for use in low (laptops, cameras and smart cellular phones) and high (hybrid and all electric vehicles, renewables, aerospace) energy and power demand applications. Therefore, there is a strong need for energy storage systems with higher energy and power densities. One way to achieve this goal concerns the development of new anode materials alternative to graphite that is currently used in commercial lithium ion batteries. Silicon is considered as an alternative attractive high capacity anode material for Li-ion batteries with theoretical specific capacity of Si almost 10 times higher than that of graphite. Technological challenges and related efforts will be presented.

Biography:

Assistant Professor Filippos V. Farmakis received in 1996 his B.S. degree in Physics from Aristotle University of Thessaloniki, Greece, the M.Sc. degree in Optics, Optoelectronics and Microwaves from Grenoble Institute of Technology, France, in 1997 and his Ph.D. from the same School in 2000. After that he joined UNAXIS SA, Palaiseau, France as Process Engineer and later as R&D Team Leader and worked on thin film deposition on PECVD production systems. In 2006 he contacted research on chemical sensing field-effects devices and thin film transistors with IMEL, NCSR Demokritos, Athens, Greece. In 2008, he was employed as Head of Technology at Heliosphera SA, a Greek company producing thin film photovoltaic modules in a 60MW manufacturing line. On July 2012 he joined Democritus University of Thrace, Electrical and Computer Engineering Department as Lecturer and from July 2015 he is Assistant Professor. He pursues research on solar cell technology, thin films, sensors and lithium- ion cells.

Dr. Amine Bermak

Hong Kong University of Science and Technology

Autonomous self-powered and self-calibrated Microsystems for IoT applications

Tuesday, April 17, 2018
15:45 – 16:30

Abstract:

"Autonomous Microsystems" refers to smart electronic systems that are able to sense, process and transmit useful information from the environment while being completely autonomous by harvesting readily available solar, thermal or kinetic ambient energy. Deployed in IoT applications, these smart devices are able to monitor water leakage in a water pipe, blood pressure in human body, temperature of frozen food items, but also humidity, air and water quality in intelligent buildings and smart cities. The design of "autonomous Microsystems" must take into consideration a number of challenging IoT constraints such as low cost, self-calibration to minimize human intervention, and self-power generation to replenish depleted energy resources. Silicon based technology is the only alternative solution offering single-chip solutions featuring the best trade-off in terms of cost/performance and enabling large scale integration and mass volume production leading to large scale deployment of "autonomous microsystem" devices in various emerging IoT applications with minimal human intervention.

This talk will present enabling technologies for IoT sensing addressing key issues related to power consumption, energy harvesting and calibration of "autonomous Microsystems". Three case studies will be presented, namely: (i) smart vision systems with energy harvesting capabilities, (ii) Batteryless temperature sensing for passive RFID applications and (iii) olfactory sensors with self-calibration capability. The talk will cover state-of-the art technological developments in this area, and outline existing challenges as well as emerging new opportunities for research and innovation in this rapidly growing field. The conclusion of the talk will discuss whether "autonomous microsystems" are becoming a reality or is just another engineering dream idea.

Biography:

Prof. Amine Bermak received the Masters and PhD degrees, both in electrical and electronic engineering (microelectronics and Microsystems), from Paul Sabatier University, Toulouse, France in 1994 and 1998, respectively. During his PhD, he was part of the Microsystems and Microstructures Research Group at the French National Research Centre LAAS-CNRS, where he developed a 3D VLSI chip for artificial neural network classification and detection applications in a project funded by Motorola. While finalizing his PhD, he was offered a Post-doc position at the Advanced Computer Architecture group at York University – England, to work on VLSI implementation of CMM neural network for vision applications in a project funded by British Aerospace. Prof. Bermak was nominated for the 2013 Hong Kong UGC best teacher award (for all HK Universities). He is the recipient of the 2011 University Michael G. Gale Medal for distinguished teaching (Highest University-wide Teaching Award). This gold medal is established to recognize excellence in teaching and only one recipient/year (out-of over 550 faculty) is honored for his/her contribution. Prof. Bermak is also a two-time recipient of the "Engineering School Teaching Excellence Award" in HKUST for 2004 and 2009, respectively. Prof. Bermak has received many distinguished awards, including the 2016 DAC best design context award, the "Best paper award" at IEEE International Symposium on Circuits and systems ISCAS 2010; the 2004 "IEEE Chester Sall Award"; the IEEE Service Award from IEEE Computer Society and the "Best Paper Award" at the 2005 International Workshop on System-On-Chip for Real-Time Applications. He has published over 250

articles in journals, book chapters and conference proceedings and designed over 50 chips. He has supervised 25 PhD and 16 MPhil students. He has served on the editorial board of IEEE Transactions on Very Large Scale Integration (VLSI) Systems and IEEE Transactions on Circuits and Systems II. He is also currently serving on the editorial board of IEEE Transactions on Biomedical Circuits and Systems; IEEE Transactions on Electron Devices and Nature Scientific Reports. He is the guest editor of the November 2010 special issue in IEEE Transactions on Biomedical Circuits and Systems. Prof. Bermak is a Fellow of IEEE and IEEE distinguished Lecturer. He was the co-director of MIT-HKUST Consortium.

Dr. Adel Mellit

JIJEL University, Algeria.

Application of artificial intelligence techniques in photovoltaic systems: Trends, challenges and recommendations

Tuesday, April 17, 2018
09:45 – 10:30

Abstract:

The efficient use of renewable energy is one of the most fundamental challenges to the scientific community. In the Middle East – North African countries, the potential for renewable energy is strongly dominated by solar energy. The photovoltaic generation and concentrating power systems are the most promising renewable energy sources in these countries. Artificial intelligence (AI) techniques are becoming useful as alternate approaches to conventional techniques or as components of integrated systems. They have also been applied for modeling, identification, optimization, forecasting and control of complex systems. This talk aims to present and discuss the most recent research on the application of AI techniques in photovoltaic systems (Sizing and optimization, output power maximization and forecasting, monitoring and faults diagnosis). Advantages and limits of AI methods in terms of feasibility, complexity, cost-effectiveness and generalization capability and real time integration will be highlighted.

Biography:

Dr. Adel Mellit is Professor of Electronics at the Faculty of Sciences and Technology, Jijel University, Algeria. He received his M.S. Degree and Phd in Electronics from the University of Sciences Technologies (USTHB) Algiers in 2002 and 2006 respectively. Research interests of Dr. Adel Mellit focus on the application of the artificial intelligence techniques in photovoltaic systems and micro-grids, control, fault diagnosis, optimization and real time applications. He has authored and co-authored more than 90 papers in international peer reviewed journals (mostly in Elsevier), and papers in conference proceedings (Mostly in IEEE) mainly on photovoltaic systems and six book chapters. He is the Director of the Renewable Energy Laboratory at the Jijel University and is an Associate Member at the ICTP Trieste (Italy). He is actually serving on the Editorial Board of the Renewable Energy and of the Energy Journals (Elsevier Ltd).

Dr. Khalid RADOUANE

EDF- Renewable Energy Departement, Paris. France

Energy Storage Systems: Challenges and Technical Solutions

Tuesday, April 17, 2018
11:00 – 11:45

Abstract:

Large scale adoption of renewable energy becomes available along with the development of new technologies. However, energy storage is expected to rise to the challenge of the grid caused by the characteristics of the randomness and volatility of the renewable energy. An energy storage system must be able to stabilize the random nature of the output of the renewable power plant and improve the reliability of the distribution network with optimization of the storage devices capacity. Challenges of such systems and technical solutions will be presented.

Biography:

Khalid Radouane is the head of solar PV and storage department in the EDF industry leadership of new energies since 2009. He is the strategic pilot of the R & D program on innovation in the field of photovoltaic, storage and system services. He got the Phd in physics at Laplace Institute of Toulouse. He is also a member of the scientific committee of the EUPVSEC international conference where he has been a member since 2013. Dr. Radouane has more than 20 years experience in the field of high-tech (microelectronics, flat panel displays and renewable energies, notably photovoltaic and the storage of energy in all its forms). He held several positions of expertise and project management before joining the EDF group as head of department. He worked for Atotech (Total subsidiary), Oerlikon (manufacture of equipment for flat panel displays) and Soitec (manufacturing of SOI wafers and CPV panels).

Dr.Omar ELMAZRIA

Lorraine University, Polytech Nancy. France

Surface Acoustic Waves (SAW) Technology as 3 less sensors: Wireless, Batteryless and Packageless

Monday, April 16, 2018
15:00 – 15:45

Abstract:

Surface acoustic wave (SAW) devices, are key components in communication systems and are widely used as filters, delay lines or resonators. Because SAW devices are highly sensitive to external physical parameters and to any disturbance that may affect the velocity, distance travel or even the mode of wave propagation, they also offer new and very promising solutions in a wide range of applications including physical and chemical sensors. In addition of being small, simple and robust, these devices have the advantage of being batteryless (passive), wireless and packageless in specific configuration. The use of SAW filter facilities and standard components of RF communication make the production of SAW sensors and their reader units inexpensive if they are fabricated on a large scale. The use of SAW devices as passive and wireless sensors

allows them to operate in extreme conditions such as those with high levels of radiation, high temperatures up to 1000°C, or electromagnetic interference, in which no other wireless sensor can operate. This is obviously conditioned by the fact that the materials constituting the device can withstand these harsh conditions. Combined with flexible substrates, SAW sensors will find applications in the biomedical and welfare for a continuous monitoring of the human body's parameters. In this lecture, general principle of the SAW sensor in wired and wireless configurations will be developed and a review of recent works in our group mainly in the field of high temperature applications and magnetic field sensor.

Biography:

Omar ELMAZRIA is a Full Professor (Exceptional Class) at Université de Lorraine (UL) within Institut Jean Lamour (IJL UMR 7198) for research and Polytech Nancy for teaching. Born in 1968, he received his M.S. degree in Industrial computer science and opto-electronic conjointly from Universities of Metz, Nancy I, and the National Polytechnic Institute of Lorraine, in 1993 and his Ph.D degree in Electronic (evaluation and prediction of irradiation effects on semiconductors devices) in 1996 from Metz University, France. In 1997, he joined the University of Nancy I (now Université de Lorraine) as Associate Professor of Electronic and communication systems and as full Professor respectively in 1997 and 2003. He is also a member of the IUF (Institut Universitaire de France) and was guest Professor at several Universities around the world (Canad, China, USA). He was the head of Micro and Nansystems group and leader of Callot Project (Federator and interdisciplinary project in the field of nanosciences and nanodevices) within the Institut Jean Lamour and now leader of Piezoelectricity & Acoustic Topic within ISITE-LUE program (Loraine Université d'Exellence). His current research focuses on Surface acoustic waves (SAW) devices for communication systems and sensing applications. SAW filters and resonators based on layered structures including diamond, AlN, ZnO, were developed for high frequency applications (3-10 GHz range) and original SAW sensors for temperature, pressure, magnetic field, and showing the advantage to be passive (batteryless) wireless and/or packageless are demonstrated. Those promising sensors present a solution of choice in various fields such as monitoring in harsh environments or in biomedical applications. Prof. ELMAZRIA is currently the coordinator of ANR SALSA project aimed at the development of passive and wireless sensors for steel industry and operating up to 1000 ° C. He also manages several projects funded by ANR, DGA, ISITE, SATT GE for the development of wireless sensors for biomedical applications. He is the author and co-author of more than 160 international scientific articles, 4 international patents issued, and more than 120 communications in international conferences. He was a co-chair of Technical Program Committee (TPC) group 4 of IEEE International Ultrasonics Symposium and is a co-chair of IEEE ICEMI and member of technical or organization committees of several other international conferences. In 2017, he receive URSI-France medal from the International Union of Radio Science.

Dr. Mustapha Jouiad

Masdar Institute of Science and Technology, UAE

Use of surface plasmon resonance to enhance water splitting process through solar energy excitations

Tuesday, April 17, 2018
15:00 – 15:45

Abstract

The inherent increasing demand in energy solutions and new technologies in various sectors such as transport and environment has prompted scientists to custom the materials design and properties for targeted application. Most of the newly developed materials are complex composites with more and more reduced size and dimensions. These materials are developed to cope with the desire of the renewable energy and to cut with previous practices too much fossil energy demanding. Hence, the energy solutions for the future suggest the realization and development of eco-friendly and economic energy sources. Many natural sources such as, solar energy, wind energy and biofuels have been used in order to reduce the carbon emission. In this regard, solar energy assisted water splitting and hydrogen production has shown a promising potential. Oxides such as TiO2 has excellent catalytic property in splitting water molecules, however, its ability to absorb light is limited within the UV region (band gap 3.2 eV).Adding localized surface plasmon resonance (LSPR) nanoparticles (NPs) such as Au or Pt to a suitable oxide material, the optical activity of the composite metallic dielectric photonic crystal (MDPhC) material can be significantly enhanced. An LSPR metallic particle absorbs the light in visible-IR ranges and subsequently provides hot electrons to the attached metal oxide layer. Hence, metal oxide catalyst could pursue its hydrogen generation process over the full solar spectrum. The MPhC used in this investigation, is based on TiO2 acting as the WS catalyst and Au NPs as the LSPR material. The design of MDPhC is requiring additional compounds to receive the TiO2 catalyst consisting of substrate, buffer and stand made of Si, SiO2 and Al2O3 respectively. In this case, the WS activity fundamentally can depend on the (i) production rate of hot electrons in the Au part through plasmon resonance, (ii) the transport of the hot electrons produced in Au to the TiO2 material, and (iii) the degree of crystallinity of the catalyst (TiO2). This seminar will be tackling all these aspects and highlighting the importance of LSPR materials as well as the catalyst microstructure and their impact on water splitting activity of the WS device.

Biography:

Dr. Mustapha Jouiad obtained his PhD in Materials Science and his Master degree in solid sate physics and physics of particles from University of Paul Sabatier, Toulouse, France in 1996 and 1993 respectively. Prior Joining Materials Science program at Masdar Institute of Science and Technology as faculty and principal investigator, he worked at very prestigious universities such as University of Illinois at Urbana Champaign (UIUC) and King Abdullah University of Science and Technology (KAUST) as well as in National Labs such as CNRS France and Lawrence Livermore National Lab (LLNL). His research interests are in Advanced Materials and Multiscale Characterization with applications in energy and environment. His approach allows better correlation between the Material properties at different scales (Micro & nano) and the energy. Most of his focus, concerns renewable energy. Dr. Jouiad is an accomplished & recognized Scientist in Advanced Materials for Energy, he has authored and co-authored more than 70 publications in peer review journals and referred proceedings. He supervised and co-supervised several PhD and Masters Students.

ICEERE'2018 SESSIONS PROGRM

Presentation guidelines

- All presentations are in English.
- Each presentation is fifteen (15) minutes long with five (5) minutes for Q/As.
- Arrive 10 minutes before the session start time to upload your power point presentation. Please, start and end your presentation on time and keep the time schedule.
- For poster presentations, the posters should be displayed one hour before the beginning of the poster session and any explanation required should be provided to session chairs and visitors.

SESSIONS PROGRAM

Session I **Tuesday, April 17, 2018** **11:45 -13:30**	**Solar energy-characterization and diagnostics** **Chairs :** **El Yaakoubi Mustapha, TFSC-Instrument, France** **Belkheiri Ahmed, University Amar Telidji of Laghouat** **Anne Migan Dubois, Central Supelec, France**
11:45 -12 :00	Parameters Extraction of Photovoltaic cell using a New Method Based on Experimental Current –Voltage Characteristic (ID:9)
12:00 -12 :15	Photovoltaic Discoloration and Cracks: Experimental Impact on the I-V Curve Degradation (ID:11)
12:15-12 :30	Evaluation of different PV prediction models. Comparison and experimental validation with one-year measurements at ground level (ID:29)
12:30-12 :45	Experimental Investigation of Potential Induced Degradation (PID) Impact and Recovery on Crystalline Photo-voltaic Systems (ID: 56)
12:45-13 :00	Mathematical models calculating PV module temperature using weather data: Experimental study (ID: 60)
13:00-13 :15	Influence of CZTS layers parameters on performance cells of kesterite thin-film solar cells (ID:101)
13:15-13 :30	Methylcyclohexane Continuous Distillation Column Fault Detection Using Clustering Method based on K-Means (ID: 153)

Session II-1 Monday, April 16, 2018 15:00 -16:45	Solar energy- Control Systems for PV Chairs : Adel Mellit, Jijel University, Algeria Mohamed Benghanem, Taibah University, Saudi Arabia
15:00 -15:15	A New Maximum Power Point Tracking PV_Control for rapid changes in irradiation level (ID: 42)
15 :15 -15:30	Modeling and simulation of a PV system connected to a low-voltage three-phase utility grid (ID: 49)
15:30 -15:45	Power flow control in autonomous micro-grid operation Using Ants Colony Optimization under variable load conditions (ID: 53)
15:45-16:00	Solar Charge Controller with a Data Acquisition System Based on Arduino (ID:69)
16:00-16:15	Consolidation of FLC and ANN to supervise PV Maximum Power Point for stand-alone PV systems (ID:77)
16:15-16 :30	Mathematical modelling and simulation of a directly coupled water pumping system, using a photovoltaic-fed synchronous reluctance motor (ID:112)
16:30-16 :45	A method for parameter extraction of photovoltaic modules (ID: 133)

Session II-2 Monday, April 16, 2018 17:00- 18:30	Solar energy- Control Systems for PV Chairs : Eric Sandré, EDF-Renewable Energy, France Adel Mellit, Jijel University, Algeria
17:00-17:15	Interleaved Positive Buck-Boost Converter (ID:122)
17:15-17:30	A reconfigurable PV architecture based on irradiance equalization strategy (ID:123)
17:30-17:45	Comparison between Artificial Neural Network and its Combination with Perturb & Observe as a MPPT control method of Photovoltaic System (ID: 147)
17:45-18:00	Design of a Quadratic Boost Converter for a standalone PV System Based on INC MPPT Algorithm (ID: 139)
18:00 - 18:15	Study of the Islanding detection of a Grid-connected photovoltaic system(ID: 37)
18:15-18:30	Optimal exploitation of the photovoltaic system and compensation of the energy deficit by the electrical grid (ID: 81)
18:80-18:45	Design of a Quadratic Boost Converter for a standalone PV System Based on INC MPPT Algorithm (ID: 139)

Session III Tuesday, April 16, 2018 17 :00 -19 :00	Solar Energy Thermal Chairs : Guisseppe Tina , Catania University, Italy Quaranta Emanuelle, Politechnico di Torino, Italy
17 :00 -17 :15	Numerical study of an Earth-to-Air Heat Exchanger for cooling and preheating (ID: 2)
17 :15 -17 :30	Geometric and optical efficiency study for solar parabolic trough concentrator using the deflectometry technique (ID:26)
17 :30 -17 :45	The characterization and modeling kinetics for drying of Taraxacum Officinale leaves in a thin layer with a convective solar dryer (ID: 46)
17 :45 -18 :00	Experimental study of fouling in hybrid cooling tower used in CSP plants: A Prototype scale preliminary test feedback (ID: 88)
18 :00 -18 :15	Technico-economic aspect analysis in the design of solar chimney power plants (ID: 90)
18 :15 -18 :30	Data visualization and statistical analysis of a solar parabolic trough collector possesses of filled-type evacuated tube with U Shaped, under south-eastern of Morocco (ID:113)

18:30 – 18:45	Absorber designs effect on the performance of PV/T water hybrid collector (ID: 155)
18:45 – 19:00	Modeling approach of the experiment: Waste reuse of the Jerada thermal power plant (Morocco) (ID: 150)

Session IV **Monday, April 16, 2018** **11 :45 -13 :00**	**Control of Wind Energy System** **Chairs :** **Nacer Msirdi, University of Marseille, France** **Smail Zougar, High School of Technology, Oujda, Morocco**
11:45 -12 :00	Design, Simulation & Performance Analyses of Voltage Regulator Based on STATCOM for Asynchronous Wind Turbine (ID: 103)
12:00 -12 :15	A Comparative Investigation & Evaluation of Maximum Power Point Tracking algorithms applied to Wind Electric Water Pumping System (ID: 104)
12:15 -12 :30	Implementation of a Real-Time MPPT of Hybrid Renewable Energy System composed of Wind Turbine and Solar PV Cells (ID: 108)
12:30 -12 :45	Analysis of a Terrain characteristic using WAsP and windPRO (ID: 23)
12 :45 -13 :00	Improved Dynamic Performance of Wind Energy Conversion System by STATCOM (ID: 169)

Session V **Tuesday, April 17, 2018** **12:15 – 13 :00**	**Energy Storage System and Control Management** **Chairs :** **Khalid RADOUANE, EDF-Renewable Energy, France** **Filippos Farmakis, Thrace University, Greece**
12:15 - 12:30	Load Analysis and Consumption Profiling: An overview (ID: 89)
12:30 - 12:45	Modelling and exergy analysis of latent heat thermal energy storage system (ID: 159)
12:45 - 13:00	Power Management of Seven Levels Cascaded Multilevel Inverter with Hybrid Sources (ID: 140)

Session VI **Tuesday, April 17, 2018** **15:00 - 15:45**	**Hydrogen Production** **Chairs :** **Khalid RADOUANE, EDF-Renewable Energy, France** **Aziz Naamane, University of Marseille, France**
15:00 - 15:15	Simulation and conception of prototype for hydrogen storage in solids form (ID: 59)
15:15 - 15:30	A comparative Study on Hydrogen Production from Small-scale PV and CSP systems (ID: 71)
15:30 – 15:45	Optimal hydrogen production by photovoltaic energy using an electrolysis with cylindrical electrodes (ID: 99)

Session VII Tuesday, April 16, 2018 17 :00 -18 :30	**Electrical Machines and Power System** **Chairs :** **Yousfi Driss, ENSA, Mohamed Fisrt University, Morocco** **Jamal Bouchnaif, EST, Mohamed First University, Morocco** **Aziz Derouich, EST, Sidi Mohamed Ben Abdellah University, Morocco**
17 :00 -17 :15	Analysis of 48-pulse Based UPFC Performance under Balanced and Fault Conditions (ID : 170)
17 :15 -17 :30	Switched reluctance motor iron losses prediction method (ID: 7)
17 :30 -17 :45	Design, simulation and experimental results of an isolated switched-mode power supply up to 1kW (ID: 57)
17 :45 -18 :00	Mathematical modeling and simulation of a directly coupled water pumping system, using a photovoltaic fed synchronous reluctance motor (ID: 112)
18:00 – 18:15	Nonlinear Numerical study of Mutual Inductances for Switched Reluctance Machine (ID: 144)
18:15 – 18:30	Analysis of the electrical unbalance caused by the Moroccan high-speed railway in the high voltage power grid for the starting horizon (2018) and the horizon (2030) (ID: 6)

Session VIII Monday, April 16, 2018 16 :45 -18 :30	**Nonlinear Control Systems** **Chairs :** **Abdellah Benzaouia, University Cadi Ayyad, Marrakech, Morocco** **Rabhi Abdelhamid, University of Picardie Jules Verne, Amiens France**
17 :00 -17 :15	Robust Model Predictive Control for Nonlinear Time-Delay Systems (ID: 1)
17 :15 -17 :30	Robust ADRC control of a Doubly Fed Induction Generator Based Wind Energy Conversion System (ID: 75)
17 :30 -17 :45	Adaptive Super Twisting Sliding Mode Controller for DC/DC Converters in Electric Vehicle Applications (ID: 111)
17 :45 -18 :00	Induction machine parameter identification using LMS algorithm associated with a nonlinear adaptive observer (ID: 125)
18:00 – 18:15	Fault Detection for Discrete-time Switched Delay Systems with External Disturbance (ID: 17)
18:15:- 18:30	Prediction of critical flashover voltage of polluted insulators under sec and rain conditions using Least Squares Support Vector Machines (LS-SVM) (ID: 137)

Session IX-1 Tuesday, April 17, 2018 11:45-13:30	**Electronics** **Chairs :** **Jerome Launay, LAAS-CNRS, Toulouse, France** **Bekkay HAJJI, ENSA-Oujda, Morocco**
11:45 -12:00	III-V Semiconductor MOSFET Structure (InP/InAs/InGaAs) I-V Characteristics Using Silvaco TCAD Simulator Characteristic (ID: 3)
12:00 -12:15	Theoretical study of intersub band absorption coefficient in GaNAsBi/GaAs quantum well structures (ID: 4)
12:15 -12:30	Optimization of the Temperature Effects on structure InAs/GaAs QDSC (ID: 34)
12:30 -12:45	Electro-thermal Model of a Silicon Carbide Power MOSFET (ID: 84)
12:45 -13:00	Inter Area Oscillation Detection Using PMU Technology In The North Africa Power System (ID: 106)
13:00 -13:15	ASIC Physical Design Flow: Power saving opportunities on wire interconnection (ID: 63)
13:15 -13:30	Full-Wave Modal Integral Method for Robust Modeling of Symmetrical/Asymmetrical Finlines Structures Embedded in Multilayered

	Dielectric Substrates (ID: 151)

Session IX-2 Monday, April 17, 2018 11:30 -13:30	Electronics **Chairs:** **Amine Bermak, Hamada Bin Khalifa University,Qatar** **Salah Eddine Naimi, ENSA-Oujda, Morocco**
11:30-11:45	An accurate NPT-IGBT SPICE model with simple parameter extraction method (ID: 30)
11:45-12:00	Fractional behavior of PN junction diode under ac-small signal conditions (ID: 121)
12:00-12:15	Power-Performance Trade-Off in 7nm Designs (ID: 67)
12:15-12:30	Degradation of Peach using an Electronic Nose for Food Quality Control (ID: 80)
12:30-12:45	State Space Models for Power SiC MOSFET (ID: 157)
12:45- 13:00	Design and Simulation of an Ion Sensitive Field Effect Transistor (ISFET), with Low Thermal Sensitivity (ID: 148)
13:00 – 13:15	Electrical and thermal modeling and aging study of a C2M0025120D silicon carbide-based power MOSFET transistor (ID: 141)
13:15- 13:30	Improved electrical performance of InP-based Single Heterojunction Bipolar Transistor in terms of the maximum frequency of oscillation (ID: 154)

Session X Tuesday, April 17, 2018 15:45 -16:30 17:00 – 18:30	Materials and Devices Applications **Chairs :** **El Yaakoubi Mustapha, TFSC-Instrument, France** **Bria Driss, Mohamed First University, Morocco**
15:45 -16:00	Localized states in GaAs/Ga1-xAlxAs Multi-Quantum-Wells (ID: 54)
16:00 -16:15	Low temperature sensor based on one-dimensional photonic crystals (ID: 70)
16:15 -16:30	Study of new band pass filter using a resonator defect in a one-dimensional photonic comb containing a left-hand material (ID: 72)
17:00 -17:15	Synthesis and characterization of nanostructured Aldoped ZnO thin films prepared by the mist chemical vapor deposition (Mist-CVD) method: effect of Al doping (ID: 82)
17:15 -17:30	Physical properties of Cu2ZnSnS4 film developed by the doctor-blade printing from microwave-processed ink: experimental and theoretical investigation (ID: 87)
17:30 -17:45	Analysis of Epstein Distribution Effect on the Plasma Reectance (ID: 109)
17:45 -18 :00	Facile synthesis of silver nanoparticles on ITO surfaces: Effect of size and density dispersion on optical and electrochemical measurements (ID: 161)
18:00 -18:15	Effect of mixing complexing agents on the properties of electrodeposited CZTS thin films (ID: 118)
18:15 – 18 :30	Estimation of the Effective Magnetic Permeability of Polycristals using a Self-Consistent Scheme (ID:120)

Session XI Monday, April 17, 2018 11:45 -13 :00	**Image and Signal Processing** **Chairs :** **Mohamed EL Hitmy, Mohamed First University, Morocco** **Malika Kedir, Houari Boumedien University, Morocco** **M'barek Nasri, EST, Mohamed First University, Morocco**
11:45 -12:00	Textures classification by color multi-space and evolutionary strategy approaches (ID: 5)
12:00 -12:15	Vehicle trajectory clustering using variable kernel estimator (ID: 91)
12:15 -12:30	Human Activity Recognition in Smart Home Environment Using OS-WSVM Model (ID: 33)
12:30 -12:45	Scalability improvement of GMM background subtraction algorithm on a multi-core parallel architecture for vehicles detection (ID: 115)
12:45 -13:00	E-Health Human Activity Recognition Scheme Using Smartphone's Data (ID: 44)

Session XII-1 Monday, April 17, 2018 15:00 -16:15	**Networks and Telecommunications** **Chairs :** **Amine Koulali, ENSA, Mohamed First University, Morocco** **Farid Abdi, FST, Sidi Mohamed Ben Abdellah University, Morocco** **Saad Bennani, ENSA, Sidi Mohamed Ben Abdellah University, Morocco**
15:00 -15:15	Performance Evaluation of DS-CDMA System Based on Multiple Access Interference Analytical Expression (ID: 24)
15:15 -15:30	60 GHZ millimeter wave generation for RoF systems based on the beat of narrow band Bragg filters (ID: 27)
15:30 -15:45	Performance analysis of routing protocols in VANETs using SUMO and NS3 (ID: 40)
15:45 -16:00	Horizontal-shuffled scheduling for the Low Density Parity Check codes decoding for WiMAX application (ID: 86)
16:00 -16:15	Performance comparison of the IEEE 802.15.4 & IEEE 802.15.6 standards in WBAN based on MAC sub-layer (ID: 105)

Session XII-2 Tuesday, April 17, 2018 11:00 -12:15	**Networks and Telecommunications** **Chairs :** **Amine Koulali, ENSA, Mohamed First University, Morocco** **Farid Abdi, FST, Sidi Mohamed Ben Abdellah University, Morocco** **Saad Bennani, ENSA, Sidi Mohamed Ben Abdellah University, Morocco**
11:00-11:15	Estimating Direction of arrival using spatial smoothing improvement adapted to MUSIC for indoor localization using RFID (ID: 25)
11:15 – 11:30	Transient Analysis of Grounding Grids Buried in Homogeneous and Heterogeneous Soil (ID: 132)
11:30 – 11:45	Analysis of Epstein Distribution Effect on the Plasma Reflectance (ID: 109)
11:45 – 12:00	24 GHz High Gain Rectangular Dielectric Resonator Antenna (RDRA) for Anti-collision Short Range Radar (SRR) Application (ID: 149)
12:00 – 12:15	Efficient Analysis of Dual-band Anisotropic Monopole Antennas for Wireless Applications (ID: 152)

Session XIII Monday, April 16, 2018 17:00 -18 :45	**Wireless Networks and Information Systems** **Chairs :** **Slimane Mekaoui, ENSA Oujda, University Med First, Morocco** **Kamal Goumid, ENSA Oujda, University Med First, Morocco**
17:00 -17:15	Effect of packet length on the resulting bitrate in Narrowband wireless networks (ID: 19)
17:15 -17:30	Impact of Message size on the Average delay in Narrowband Wireless Links (ID: 20)
17:30 -17:45	Highly Efficient UPS Systems for Output Voltage THD Maximum Protection (ID: 21)
17:45 -18:00	Calculating Page Pertinence for Web Referencing: New approach (ID: 65)
18:00 – 18:15	ANOVA decision tool for determining the best estimation of a large scale IP Network Traffic Matrix using ARIMA/GARCH algorithm (ID: 131)
18:15 – 18:30	Localization approach based on multilateration and geometric center of cloud of points in WSN (ID: 127)
18:30 – 18:45	An enhancement for the Autonomic Middleware-Level Scalability Management within IoT System using Cloud Computing (ID: 166)

Monday, April 16, 2018	**Poster session I** **Chairs :** **Rabhi Abdelhamid, University of Picardie Jules Verne, Amiens France** **El Ouariachi Mostafa, EST, Mohamed First University, Morocco**
16 :30 – 17 :00	Intelligent Command for the maximization of the energy of wind systems with synchronous generators permanent magnet (ID: 92)
	Modeling of the Unified Power Flow based Fuzzy logic Controller connected to a wind farm (ID: 107)
	A Note on Economic Evaluation of a Wind Energy Project (ID: 128)
	Study of the Performance of the Solar Chimney Power Plant (ID: 58)
	Turbulent forced convection heat transfer in a horizontal partitioned channel (ID:126)
	Transient Thermal Analysis of Integrating the Solar Thermal energy system in the thermophilic anaerobic di-gestion using TRNSYS simulation: Application kenitra Morocco (ID: 119)
	Thermoacoustic effect under the influence of resonator curvature (ID: 143)
	Raman analysis of graphene/PANI nanocomposites for photovoltaic (ID: 38)
	Modeling Surface Solar Radiation for Cloudy Sky using MODIS Atmospheric Products (ID: 41)
	The Buck/Boost shunt converter for the PV systems (ID:14)
	Control of a Proportional Resonant Current Controller Based Photovoltaic Power System (ID: 50)
	A decoupled control study of a grid- connected photovoltaic power system (ID: 110)
	Modeling and Design of a dynamic exoskeleton system with various speeds for hemiplegic patients (ID: 170)
	Effect of Sputtering Area Ratio of Gold/Silica Target and Thermal Annealing on Structural and Optical Absorption Properties of Au Nanoparticles dispersed in Amorphous Silica Dielectric Films (ID: 164)

Tuesday, April 17, 2018	**Poster session II**
	Chairs : **Filippos Farmakis, Thrace University, Greece** **Hicham Bouali, EST, Mohamed Fisrt University, Morocco** **Amraqui Samir, EST, Mohamed Fisrt University, Morocco**
10 :30 -11 :00	Sliding-Mode Controls Applied to Induction Machine Fed by Three - Level Inverter (ID: 98)
	Comparison of the different commands direct and indirect of a single-phase inverter PV (ID: 78)
	Real-Time Control of AC Machine Drives using RT-LAB Package (ID: 95)
	Explicit and Semi-Implicit finite volume scheme for open channel flow with irregular bed (ID: 47)
	FPGA Hardware Implementation of Image Processing Techniques (ID:130)
	Fabrication and characterization of Copper-Tin-sulfide thin film (ID: 61)
	Crystallographic, Morphological Analysis On Al Doped Zno Nanoparticles (ID: 165)
	Study of different latent heat storage technologies adequate for application in the 1 MWe Fresnel CSP plant installed at Green Energy Park in Morocco (ID: 74)
	Harvesting energy from vehicle suspension by a hybrid system (ID:76)
	Electrical Loads of a Smart House and Consumption Analyses (ID:102)
	Potential sensible thermal energy storage (TES) filler materials for Medium range temperature applications (ID: 114)
	Biomass higher heating value prediction from ultimate analysis (ID:158)
	Renewable energy and its impact on economy (ID: 156)
	Double-gate MOSFET model implemented in advanced hardware description language for transient circuit simulation (ID: 18)
	Improvement Performances of an Active Filter by Using Adaptive Minimum Variance control (ID: 35)
	Combined simulation of the IGBT and PIN diode behavioral models under SIMULINK (ID: 76)
	QRS Complex Characterization based on Non-negative Matrix Factorization NMF (ID: 100)
	Exploitation of the XSG in the FPGA Hardware Implementation of a Medical image Signal Processing (ID: 134)
	Numerical Investigation of Coupled Surface Radiation And Natural Convection In A Triangular Shaped Roof (Gabel Roof) Under Winter Conditions (ID: 135)