

Program Book

MATERIALS

& ENERGY

Caserta, Italy



ICOME'23



LOCATION OF THE ICOMÉ23



ICOME23 – INTERNATIONAL ATTENDEES



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WELCOME

After the success of the International Conference on Materials & Energy (ICOME'15) in the nice Mediterranean city Martil - Tetouan in Morocco, followed by the edition of 2016 in the beautiful Atlantic city of La Rochelle in France, the edition 2017 in the amazing Eastern part of China at Tianjin, ICOME'18 in the sunny coastal city Donostia-San Sebastian located at the North of Spain, ICOME'19 in the sweet city of Hammamet in Tunisia, back to France ICOME'21 in a very successful online edition and the edition 2022 of last year in the magnificent port city of Baku in Azerbaijan.

This edition 2023 is scheduled in Italy, in the extraordinary elegant city of Caserta. It was chosen thanks to its perfect location which is 36 kilometers north of Naples on the edge of the Campanian plain. The city is best known for the 18th-century Bourbon Royal Palace of Caserta. This year 2023 is the 250th anniversary of the death of the architect Luigi Vanvitelli, who designed and realized the Royal Palace.

The ICOME'23 Conference is an excellent meeting devoted to cutting-edge research that meets the scientific needs of university researchers, industrials and professionals in order to explore new horizons of knowledge on various subjects related to the fields of interconnection between materials and energy. This edition is honorably chaired by the presidents of the ICOME series and prof. Biagio MORRONE, from University of Campania "L. Vanvitelli" Italy.

The presidents of the ICOME series: Prof. Rachid BENNACER (Univ. Paris Saclay / ENS-Paris-Saclay) and Prof. Mohammed El GANAOUI (University of Lorraine / IUT Longwy), thanks warmly Prof Biagio MORRONE for this collaboration with University of Campania "L. Vanvitelli" Italy, and they welcome the participants and hope that everyone will find in this event subjects of interest and great pleasure in exchanging with the materials, thermal and energy communities.

BENVENUTI

Dopo il successo della Conferenza Internazionale sui Materiali e l'Energia (ICOME'15) nella bella città mediterranea di Martil - Tetouan in Marocco, seguita dall'edizione del 2016 nella bella città atlantica di La Rochelle in Francia, l'edizione 2017 nella sorprendente parte orientale della Cina a Tianjin, ICOME'18 nella soleggiata città costiera di Donostia-San Sebastian situata nel nord della Spagna, ICOME'19 nella dolce città di Hammamet in Tunisia, di nuovo in Francia ICOME'21 in un'edizione online di grande successo e l'edizione 2022 dello scorso anno nella magnifica città portuale di Baku in Azerbaigian.

L'edizione 2023 è in programma in Italia, nell'elegantissima città di Caserta. La scelta è stata fatta grazie alla sua perfetta posizione, a 36 chilometri a nord di Napoli, ai margini della pianura campana. La città è nota soprattutto per la settecentesca Reggia borbonica di Caserta e quest'anno ricorre il 250imo anniversario della morte del suo architetto Luigi Vanvitelli, che l'ha progettata e realizzata.

La Conferenza ICOME'23 è un incontro d'eccellenza dedicato alla ricerca d'avanguardia che risponde alle esigenze scientifiche di ricercatori universitari, industriali e professionisti al fine di esplorare nuovi orizzonti della conoscenza su argomenti legati all'interconnessione tra i campi dei materiali e dell'energia. Questa edizione è presieduta dai presidenti della serie ICOME e dal prof. Biagio MORRONE dell'Università della Campania "L. Vanvitelli" dall'Italia.

I presidenti della serie ICOME: Prof. R. Bennacer (Univ. Paris Saclay / ENS-Paris-Saclay) e Prof. M. El-Ganaoui (Università della Lorena / IUT Longwy), ringraziano calorosamente il Prof. Biagio MORRONE per questa collaborazione con l'Università della Campania "L. Vanvitelli". Diamo il benvenuto ai partecipanti e ci auguriamo che tutti trovino in questo evento argomenti di interesse, e un grande piacere nello scambio con le comunità scientifiche dei materiali, della trasmissione del calore e dell'energia..

FOREWORD

The global health crisis of COVID 19 has shown more than ever that the eyes of the citizens are turned towards science in order to bring very quickly palliative and then decisive solutions to the pandemic. In such situation threatening the human species, the prerogative of Science would like researchers to work together in a spirit of sharing information, methods and discoveries, simply working for the sustainability of Man and life in general when it is threatened. Although the situation prevented any face-to-face meeting, the exchanges continued.

Indeed, the evolution of knowledge during the last two centuries allows today, thanks to the development of virtual interfaces and to the progress of the algorithmic, to transport sound and visual information which tend to generalize to the sensory. No one knows the limit of this exercise. In an increasingly reliable, stable and fast way, this connection made possible the continuity of pedagogical transmission and scientific research. This is another demonstration that the knowledge produced, accumulated and preserved is today a kind of lifeline-saving arch for doctors and patients, litigators and judges, teachers and students, professors and doctoral students, to continue to advise, assist, dialogue, transmit and create the knowledge of tomorrow. In this sense, the high places of knowledge that are the Universities, the Academies of Sciences, the Schools have largely fulfilled their saving missions towards the whole humanity.

In mathematics, if the extraction of the square root of a number became a child's play with the advent of calculators, its extraction with a sheet of paper, a pencil and the four elementary operations was previously, an exercise that could be long. Similarly, for prehistoric man, bringing a quantity of water to boil without having a metal container despite the domination of fire was in the same order of challenge as extracting the root of a number without a calculator.

At first, computers worked with lamps, today's computers (for all purposes) are based on the use of transistors industrialized since 1950 and their design is closely linked to the advent of rare earths and soon quantum. By chance, Moore's law (doubling every eighteen months of the density of transistors in processors) sees its predictions come true in the challenge of materials. This law is accompanied in a global context by another law called Dennard's law (increase in computing power at constant energy), which opens the challenge of energy efficiency. Without these two competitions between materials and energy (involving many scientific disciplines), the reader is free to imagine what his daily, life would have been like during the lockdowns that have disrupted the existence of the world's citizens since the end of 2019.

In this spirit, the ICOME (International Conference of Materials & Energy) aims to bring annually an updated and balanced picture of advances in the fields of materials and energy and to address significant progress in both fundamental and applied research as well as in societal areas.

This virtuous circle has punctuated the history of humanity by taking advantage of all the advances in knowledge as a natural laboratory or as a crucible providing innovations allowing experimental physics and numerical mathematics to continue their breakthroughs. Among these breakthroughs, we will particularly note those in optoelectronics, laser physics or high-performance computing.

The ICOME 2020 edition was supposed to take place in Metz, in Lorraine, and address advances in the fields of materials and energy. This edition was to take place under the auspices and legacy of the mathematician Henri Poincaré (Nancy) and the poet Paul Verlaine (Metz), symbolizing science and society. This conference returns after an international tour in Africa and Asia, especially after the success of the 2019 edition in Tunisia. ICOME is also a bridge between the two shores of the Mediterranean, the crucible of a civilization that has largely influenced in its own way the course of the history of materials and energy.

The edition of ICOME was postponed to June 2021 and again pandemic did not allow a face-to-face event, the committee opted to maintain an online edition as a new postponement would be unfavorable to the various strong links created during all the past years.

The 2022 edition pursued the spirit of regaining a face-to-face exchange and was held in the City of Baku, Azerbaijan.

We are particularly grateful to the chairs of sessions and round tables. All authors and contributors have coped and maintained their interest in the event, we hope to live up to their expectations.

Usually, the conference is coupled with a thematic school for PhD students and newly-qualified doctors. It is a privileged place of exchange between juniors and seniors who take advantage of the event's atmosphere to benefit from the seniors' advice and experience. Only face-to-face exchanges can ensure and fully consolidate the benefits of the seniors' values.

The committee has chosen to reschedule the theme school for a more important face-to-face event during the fall of 2023/24 to guarantee the benefits for the community of PhD Students.

During this edition of ICOME'23, participants are invited to three days of intense activity, through several plenary lectures given by renowned scientists.

The series of lectures on materials and energy promotes initiatives and values aiming at the accumulation of human progress, cultural exchange, economy of mind, sharing and investment in intelligence, strength of argument, guarantee of respect for opinions, starting of creativity, support for the quest for truth. In this sense, the reference to the universal scientist Averroès born in Cordoba, Spain in 1126 and died in Marrakech, Morocco in 1198, through the prize bearing his name reinforces this vision of a man who places truth beyond the beliefs and allegiances of his time, intelligence beyond temporal interest and societal use.

"Knowledge acquired in a foreign country can be a homeland and ignorance can be an exile lived in one's own country"

Averroès (1126-1198).

The organizers of the ICOME 23 edition wish everyone a fruitful event where young researchers can deepen their knowledge both onsite and online.

The organizers would like to thank the entities that supported the event and in particular the laboratories and institutes of the University of Lorraine that encouraged and supported the holding of this edition in Lorraine and accompanied the ICOME series since its creation.

Prof. M. EL GANAOUI, Chair ICOME Serie's, University of Lorraine.

Prof. R. BENNACER, Honorary Chair ICOME Serie's, Université Paris-Saclay.

ICOME SERIES CHAIRS



Prof. Mohammed El GANAOUÏ: is a full professor at the University of Lorraine and researcher in the Jacques Villermaux Federation for mechanics, energy and processes (FR 28 63/LERMAB). He is heading the research in energy in the Henri Poincaré Institute of Technology in Longwy. Previously, he was an associate professor in the University of Limoges and the SPCTS UMR 6638 CNRS laboratory where he was responsible for the Physics Department (2004-2010) and the international cooperation service (2006-2010) in the Faculty of science and technology. His research aims to understand heat and mass transfers through modeling and numerical simulation with a specific activity in the field of the solid-liquid-vapor phase

change. Applications concern materials and energy and benefit to energy systems including phenomena for sustainable building (Eco-materials). He teaches the mechanics of continuous media, heat transfers, and numerical methods. He was advisor of more than 25 Phd Thesis with strong international interaction noticeably in the Euro-Mediterranean context. He participated/managed the PAI Australia, Canada, Maghreb (Tassili, Utique, Volubilis), China (Xugangqi). El Ganaoui has participated in the Edition of more than 10 special issues and conference proceedings, co-authored over than 200 publications in journals (rank A) and participated in more than 100 international conferences including ten he co-organized. He is member of many international scientific societies in mechanics and heat transfers.



Prof. Dr. Ing. Rachid BENNACER: is an Engineer in Mechanical field (1989), and he got his PhD thesis at Pierre et Marie Curie University (Paris 6) in 1993. He worked as lecturer in the University Paris XI (1993/94), became an associate professor at Cergy Pontoise University in 1994 and full Professor in 2008. He moved as senior Professor to the prestigious school Ecole Normale Supérieure (Paris-Saclay) since 2010. He becomes in 2017 an Exceptional National Class Professor. He is also adjunct professor at Tianjin Uni. Of comm. (China) and UMB Univ. He assumed several responsibilities,

director of the LEEVAM research team (2003-2007), Licence degrees (2008-2010), Aggregation title (2010-2011), Master research degree (2011-2013), Transfer and Environmental Research Unit (CNRS LMT-Lab) (since July 2012), dean of Civil/Environmental department (Oct. 2012/Sep. 2016) and since 2019 Coordinate International Affairs Related To Ph.D Univ. Paris-Saclay. His present research activity is within the LMPS laboratory where he managed Transfer and Environmental Research Unit. His Research field covers wide spectrum and several domains. It covers the building material for energy applications or on durability aspect, renewable and energy system. The expertise covers the direct numerical simulation including CFD coupling on multi-scales. The previous approach is consolidated by analytical or reduction approach in order to identify the instabilities and global behavior bifurcation and similarity controlling parameters in multiphysics situations. He published around 10 book chapters and more than 250 referenced international journals (Rank A).

ICOME 2023 CHAIR



Pr. Biagio MORRONE



Prof. Biagio MORRONE: Associate Professor, received his Master Degree in Mechanical Engineering in 1992, University of Naples Federico II, and earned his Ph.D. in 1995, University of Naples Federico II, with a thesis on numerical and experimental natural convection in channels. 1994, visiting Ph.D. student at Idaho State University, USA, on numerical analysis of the electronic components cooling and analytical solutions of heat transfer in solid. 1998-2002 junior researcher and 2002-today associate professor of Applied Thermodynamics and Energy Management at the University of Campania. Member of the College of Doctorate in "Mathematics, Physics and Engineering applications" teaching courses on "Numerical Methods in Physics and Engineering" at the University of Campania. Visiting researcher in India in 2018, visiting professor in France Cergy-ICAM EPMI 2019 and 2023 at the

University of Lorraine – France, leading researcher of scientific projects to produce bio-hydrogen and bio-methane from animal manure and organic fraction of municipal solid waste; leading researcher of scientific projects on Ground Energy Pile Heat Pumps; researcher for several projects in Energy recovery from Biomass; Invited speaker at several conferences on the use of bio-hydrogen in Internal Combustion Engines and Biomass to Energy conversion; co-author of more than 80 scientific publications on international journals, many others presented at international and national conferences and several book chapters; main research topics are: biomass-to-energy conversion, recovery of materials from biomass treatments, alternative fuels for internal combustion engines, heat exchangers, Organic Rankine Cycles, ground-coupled heat pumps, numerical methods for heat transfer.

INT. SCIENTIFIC COMMITTEE

<i>Abrudeanu M.</i>	<i>Acad. Sciences University</i>	<i>Romania</i>
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<i>Garcia A. M.</i>	<i>The Basque country University</i>	<i>Spain</i>
<i>Lappa M.</i>	<i>Strathclyde University</i>	<i>UK</i>
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<i>Morrone B.</i>	<i>Campania L. Vanvitelli University</i>	<i>Italy</i>
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<i>Nouari M.</i>	<i>Lorraine University</i>	<i>France</i>
<i>Nunzi J. M.</i>	<i>Queen's University</i>	<i>Canada</i>
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<i>Saghir Z.</i>	<i>Ryerson University</i>	<i>Canada</i>
<i>Takorabet N.</i>	<i>Lorraine University</i>	<i>France</i>
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<i>Uzunova M.</i>	<i>ECAM-EPMI University</i>	<i>France</i>
<i>Vieira G.M.R.</i>	<i>CEFET/RJ</i>	<i>Brazil</i>
<i>Yuen R.</i>	<i>City University of Hong Kong</i>	<i>China</i>
<i>Zhu Ji-Hong</i>	<i>Northwestern Polytech. University</i>	<i>China</i>

ICOME 23 SCIENTIFIC SECRETARY & WEBMASTER



Dr. Souad MORSLI: Assistant Professor at University of Lorraine, UL-ENIM -Metz Previously Associate Professor in Sciences and Technology of Oran Mohamed Boudiaf / USTOMB. Department of Marine Engineering. Her research interests focus on the field of heat & mass transfer, aeration dynamics, and energy optimizations.



Mrs. Amira M'HADBI: A PhD student at University of Lorraine and University of Tunis. Her research focuses on the area of fluid mechanics and heat transfer.



Dr. Hichem Ahmed MAHBOUBI: Is a self-taught software engineer with 5 years of experience. He has worked on a variety of high-profile projects, from mobile apps to web-based software solutions, and is known for his technical expertise and problem-solving abilities.



Dr. Karim RAGUI: After being Associate Professor at USTHB (Algeria) he joined the Academy of Science University (China). His research interests focus on the field of heat & mass transfer, Supercritical fluids, porous matrix, nanotechnology, pollutants spreading, energy optimizations. He is an Editor-in-Board and Guest Editor in several international journals.



Mrs. Annalinda CAPONE, Ph.D. student in Mathematics, Physics, and Engineering Applications. After graduating in Energy and Environmental Engineering, she is involved in the optimization of thermochemical and biological processes for energy and material recovery from waste and different types of biomass.



Mrs. Raffaella GRIFFO graduated in Energy and Environmental Engineering in 2021, Ph.D. student in Mathematics, Physics and Applications to Engineering at the University of Campania "Luigi Vanvitelli", she is currently working, in collaboration with Federico II University of Naples, on the production and wettability characterization of carbon nanofilms.



Dr. Giovanna Marta FUSCO obtained her PhD in April 2023 from University of Campania, where she still works in the Plant Crop Physiology Lab. Her research interests focus on the effects of plant biostimulants on the yield and metabolism of horticultural crops.

Warm thanks to the reviewers, the administration staff, and the students, as well, for their devotion, allowing the organization success of the present event.

Un caloroso ringraziamento ai revisori, allo staff amministrativo e anche agli studenti per loro devozione, che ha permesso il successo organizzativo del presente evento.

ICOME 23 TECHNICAL SC.COMMITTEE

The ICOME series is grateful to the International Scientific and Technical Committee, which accompanied the topical expertise and the follow-up of the submission pertinence. The list of these numerous highlighting colleagues will be available on the conference website.

KEYNOTE/ SYMPOSIUM/ INVITED LECTURER

Keynote Speakers

Keynote 1: Convective Transport in Channels due to the Combined Effect of Shear and Imposed Pressure

By: Pr. Yogesh JALURIA, Rutgers University, Piscataway, USA

The flow and convective heat transfer in channels are generally due to an imposed pressure difference. Flows in mini- and microchannels for thermal management of electronic systems and in heat exchangers are examples of such flows. However, in many important cases, the shear due to a moving surface may also act in conjunction with the pressure, resulting in both aiding and opposing circumstances. Examples of such flows are seen in lubrication and in manufacturing processes like extrusion, coating, and wire drawing. In optical fiber drawing and coating processes, for instance, the moving fiber imparts shear along with the imposed pressure. The transport in the channels strongly influences the thermal processing of the material and the final product. Similarly, cooling of optical fibers after the furnace drawing process is another important step in the overall fiber fabrication process. The shear is imparted by the moving fiber and inert gases like Helium and Nitrogen are driven by pressure into the cooling channel. In extrusion processes as well, shear and pressure driven flows arise and affect the transport mechanisms that influence the thermal processing of the extruded material. This paper is focused on such processes, where the flow and the convective heat transfer in channels are induced by both shear and pressure. Of particular interest are mini- and microchannels, though larger channels are also considered. The transport processes at the inlet and outlet regions of the channels are of special interest and are discussed in detail. Experimental and numerical results are presented to describe the flow in the channel and the resulting convective heat transfer. The increase in pressure in channels with reducing diameter or width is determined. This is of interest in dies and extrusion processes. It is seen that, in several practical circumstances, high velocities and fluid viscosity result in greater shear-induced pressures than the imposed pressure. The flow is then dominated by the shear effects due to the moving surface. The flow in narrow channels often develops very rapidly, resulting in largely developed flow regions. Thus, the transport rates are relatively small over much of the flow region. Methods to enhance the heat transfer under these circumstances by disturbing the flow are outlined. Comparisons between experimental and numerical results show good agreement. Therefore, the validity of the numerical models for these processes is established. The results obtained can also

be used for the design of the thermal systems, particularly in lubrication, materials processing, and manufacturing.



Pr. Yogesh JALURIA: is Board of Governors Professor and Distinguished Professor at Rutgers, the State University of New Jersey. His research work is in the field of thermal science and engineering, covering areas like convection, fires, materials processing, thermal management of electronics, energy, and environment. He is the author/co-author of 10 books, including 4 extensively expanded revised versions. He is also the editor/coeditor of 15 conference proceedings, 14 books, and 16 special issues of archival journals. He has contributed over 600 technical articles, including over 230 in archival journals and 22 book chapters. He has 3 patents and 7 copyrighted software. He has received several awards and honors for his work, such as the prestigious 2020 Holley Medal from ASME for pioneering achievements in optical fiber drawing, 2010 A.V. Luikov Award from the International Center for Heat and Mass Transfer (ICHMT) in recognition of outstanding work done over his career, the 2007 Kern Award from AIChE, the 2003 Robert Henry Thurston Lecture Award from ASME, and the 2002 Max Jakob Memorial Award, the highest international recognition in heat transfer, from ASME and the AIChE. He received the 2000 Freeman Scholar Award and the 1995 Heat Transfer Memorial Award from ASME. He has served as Department Chairman and as Interim Dean of Engineering. He served as Editor-in-Chief of the Journal of Heat Transfer, as Editor of Computational Mechanics and as Editor of Annual Review of Heat Transfer. He served as the Chair of the Executive Committee of the ASME Heat Transfer Division and that of ICHMT. He has served as conference Chair/co-Chair for several international conferences. He is an Honorary Member of ASME, and a Fellow of AAAS, ASTFE and APS. He served as the founding President of the American Society of Thermal and Fluids Engineers (ASTFE) from 2014 to 2019.

Keynote 2: Rheology of a Fluid of Energy and Environmental Interest: Response to Oscillatory Shear of Dense Suspensions

By: Prof. Mario MINALE, University of Campania "L. Vanvitelli", Aversa (CE), ITALY

Suspensions are ubiquitous both in the environment and in energy applications. The thermal and rheological properties of the suspending fluid are significantly modified by the suspended particles whose microstructure primarily affects the suspension behavior. The microstructure can be altered by the flow, and we here investigate the response of a very simple Newtonian, non-Brownian, inertialess, dense suspension of rigid hollow glass spheres to oscillatory shear, both after the very first oscillatory cycles and after a long time sweep oscillatory experiment.

We first focus on the first two or three cycles of oscillations. Experimental and numerical results agree and allow to prove that at very small strain amplitudes the oscillatory shear only induces the rotation of few couples of touching particles and the complex viscosity results slightly smaller than the steady one, at intermediate amplitudes the oscillatory shear induces the breakage of particle clusters and the microstructure modifies so to minimize particle collisions, while for very large strains the oscillatory flow reshuffles the particles inducing a microstructure as clustered as the steady state one but with a different angular distribution function. We showed that most of the microstructure rearrangement occurs soon after the flow inversion of the first cycle.

In long time sweep oscillatory experiments the suspension response resulted dependent on the amplitude of the applied strain, and, unexpectedly, on the angular frequency. Two different regimes were individuated depending on the applied strain. For values smaller than 1 the complex viscosity depends on the frequency, for values larger than 1, it is rate independent. In the first regime, the dependence on the applied strain amplitude and the angular frequency can be lumped into a single parameter: The maximum shear rate. The presence of non-hydrodynamic force, so small to be neglected in simple shear, can explain the observed behavior. Using a minimal hydrodynamic model, we show that van der Waals attraction gives rise to this behavior showing also that the rate dependence is accompanied by diverging particle diffusivities and pronounced cluster formations after repeated oscillations. We also showed that in the presence of weak attractions a new transition to irreversibility occurs below an ω -dependent critical amplitude.



Prof. Mario MINALE: is Professor of Chemical Engineering at University of Campania “Luigi Vanvitelli”.

He got the Ph.D in Chemical Engineering at University of Naples “Federico II”. He was the recipient of 3 undergraduate awards and 2 laurea dissertation prizes. In 1998 he was the recipient of the young researcher award for the best presentation at GRICU Conference.

In 2008 he was nominated for the American Chemical Society award: “Langmuir Lectureship”.

Editorial activity: 2022 : Associate Editor of “Frontiers in Soft Matter”; 2021 : Editorial Board of “Processes” ; 2021 – 2022: Review Editor of “Frontiers in Soft Matter”; 2008 – 2015: Co-editor *Panta Rei: Bulletin of SIR*; 2007 Co-guest Editor Special Issue, *International Journal of Environmental Technology and Management*, vol. 7, issues 1/2

Scientific societies: 2021-2023: President of the European Society of Rheology; 2020 : Vice-president of the Italian society of Rheology – SIR; 2019-2023: Vice-president of the European Society of Rheology; 2016- : Member of The International Committee of Rheology – ICR; 2016 - : Member of The European Society of Rheology Committee ; 2016 - : Member of the executive board and International delegate of the Italian Society of Rheology – SIR. He is member of the Society of Rheology (USA), the European Society of Rheology, the Italian Society of Rheology-SIR, GRICU.

Invited Lectures: 2009 keynote lecture at the 5th Annual European Rheology Conference AERC 2009, Cardiff; 2011 invited lecture at the opening ceremony of the Universiteti Metropolitan Tiranës; 2019 Plenary Lecturer at ic-rmm4 conference, 4th International Conference on Rheology and Modeling of Materials, Lillafured; 2019 Invited Keynote Lecturer at: VII Escuela de Verano 2019: Nuevas Tecnologías en Productividad y Recobro Mejorado de Petróleo y Gas”, Medellín (Colombia); 2021 – Invited Keynote Lecturer at VIII Escuela de Verano 2021: the role of conventional resources in Energy Transition”, Virtual, 02-04 June 2021

International Conferences Organization: 2022 Chairman of a Session of AERC 2022 Seville, Spain – 2021 - Chairman a the Session AERC 2021, Cyberspace – 2018 Chairman of AERC 2018 of the European Society of Rheology 17-20 April 2018, Sorrento (Naples) – 2016 Member of the International Advisory Board of the XVII International Congress on Rheology, Kyoto, Japan – 2012 Member of the International Advisory Board of the XVI International Congress on Rheology ICR2012 Lisbon, Portugal – 2007 Member of the organising committee of AERC2007 Naples, Italy.

Mario Minale is author of more than 160 publications on international Journals, books and on proceedings or books of abstracts of scientific conferences. Many of these papers are the result of collaboration with leading international groups and most of his activity has been focused on the rheology of heterogeneous systems.

Prof. Minale studied the non-Brownian suspensions and he was able to numerically demonstrate the existence of a single steady state in simple shear flow for suspensions in the

semidilute regime. Moreover, he investigated numerically and experimentally the mechanisms at the basis of the failure of the Cox-Merz rule even for Newtonian suspensions. He also investigated the flow through a porous medium with a new technique based on rheological measurement. The approach allowed to define a correct way to use rough geometries in rheometrical measurements. Crude oils attracted his attention in particular their rheological behaviour under the action of solvents, additives and nanoparticles.

Keynote 3: Mini/micro channels and metal foams for enhanced heat exchangers

By: Prof. Gian Luca MORINI, Alma Mater Studiorum Università di Bologna, ITALY

In the last twenty years, many research works were focused on the optimization of heat transfer in heat exchangers. Tubes are scaled down from macro-metric sizes to micrometric dimensions in order to improve their performances. Finned surfaces are replaced with porous metallic media to maximize the heat transfer surface per unit of volume.

However, the reduction of the inner dimensions of the channels implies a series of negative effects which cannot be ignored during the design of a new micro heat exchanger. In many heat exchangers the adopted number of parallel microchannels is very large and this aspect introduces a new problem related to the distribution of the working fluid among the channels. During the talk it will be shown, by means of numerical and experimental results, in which way the non-uniform distribution among the channels can be controlled by optimizing the shape of the inlet and outlet manifolds, or by introducing an additional pressure loss at the entrance of each channel. In addition, when the thickness of the solid region among the channels can become of the same order of magnitude of the hydraulic diameters of the channels the conjugate heat transfer between the solid walls and the fluids cannot be ignored both along the axial and transverse direction. The presence of a non-negligible axial and transverse heat conduction changes the behavior of the heat exchanger in terms of overall performances and the impact is different if the adopted flow configuration changes from counter-current flow to co-current flow or to cross flow configuration.

On the other hand, the replacement of conventional finned surfaces with metal foam surfaces is not always convenient. In this talk, it is shown how the adoption of metal foams with high porosity might guarantee similar pressure drops with respect to the conventional finned heat exchangers but, in terms of overall heat transfer coefficients, high values of porosity are responsible for a lower surface-to-volume ratio of the foam-based extended surfaces, yielding a strong penalization on the heat transfer rate. Moreover, the small contact area between metal fibers and tubes proved to strongly increase the contact thermal resistance between metal foams and tubes and, consequently, the overall thermal performance of the heat exchanger are reduced. The total thermal resistance is also influenced by the bonding technique adopted to build the foam-based heat exchangers. The experimental results underline that the replacement of the fins

conventionally used in water-to-air heat exchangers with metal foam surfaces can be suitable only in presence of low specific air flow rates and a reduced contact thermal resistance between foam and tubes.



Prof. Gian Luca MORINI: *is Full Professor of Applied Thermal Engineering at the University of Bologna since 2012. He is Head of the Applied Thermal Engineering Laboratory of the Department of Industrial Engineering (DIN). From 2021 he is Deputy Rector for buildings of the University of Bologna. From 2008 to 2023 he was Local Scientific leader of 3 European Projects (FP7-GASMEMS, H2020-MIGRATE, H2020-Hybrid BioVGE). He is Member of AICARR (Association of Italian Air Conditioning Systems and Refrigeration), UIT (Italian Union of Thermal Fluid-dynamics), Italian delegate of EURO THERM Committee and of the Scientific Council of International Center of Heat and Mass Transfer (ICHMT). His main research interests deal with microfluidics, heat exchangers, heat pumps and HVAC systems. He is author of more than 200 technical papers appeared on the most important International Journal and Conferences related to the Thermal Engineering and Heat Transfer.*

Keynote 4: CFD, AI and Machine Learning

By: Dr. Akshai RUNCHAL, CFD Virtual Reality Institute Analytic & Computational Research, Inc - USA

Artificial Intelligence (AI) in the form of Machine Learning through Neural Networks is rapidly transforming the practice of scientific simulation in general, and Computational Fluid Dynamics (CFD) in particular. Of special importance to CFD is the subset known as Physics Informed Machine Learning (PIML). Since the first known use of neural networks to solve partial differential equations by Lagaris in 1998, there has been an exponential increase in applying neural networks to solve otherwise intractable partial differential equations.

The simplest approach is to use a meshless collocation method and determine the unknown coefficients of the neural network by minimizing the residual of the governing equations at the collocation points. However, this has many limitations. The preferred option now is that of Physics Informed Neural Network (PINN), also called Physics Informed Machine Learning (PIML). The first use of this technique was by Raissi et.al.(2017) and involved the joint use of data driven techniques and the governing equations. Now it appears more than likely that, for scientific computing, the PINN may take its place alongside the well-known methods such as the Finite Difference Method (FDM), the Finite Volume Method (FVM) and the Finite Element Method (FEM).

One major advantage of Neural Network is that, once trained, the neural network is quick to evaluate and is more compact in terms of storage than a typical numerical method. Another major advantage is that PINN predictions can be easily integrated with data generated from experimental studies and real time data obtained from actual operations of a prototype or a target system. Further, the neural network can be trained to modify its predictions based on real time data received, say, through IoT. This makes PINN very useful in solving inverse problems, uncertainty predictions and development of fast Surrogates or Digital Twins for a real system.

The PINN, applied to CFD, does have some shortcomings. The training process is usually very slow and computationally intensive. Further it is often sensitive to the network architecture. Also, currently PINN only takes the spatial coordinates of the collocation points and time as inputs. This implies that the PINN is trained for a specific boundary and initial condition, which restricts its use in practical systems. On the other hand, the field of research is extremely active and it is expected that these shortcomings can be overcome or minimized so as to provide a real alternative to established numerical methods.

The talk concludes with a case study to illustrate the use of PINN to solve a CFD application for a real life system.



Dr. Akshai K. RUNCHAL: *Has over 50 years of experience in CFD and simulation of flow, heat and mass transport processes in engineering and environmental sciences, He obtained his Ph.D. in 1969 from Imperial College (London) under the guidance of Prof. D, B. Spalding. He was a key member of the 3-person team led by Spalding that invented the Finite Volume Method (FVM) of Fluid Dynamics (CFD) in mid 1960's. He started his professional career as a faculty at IIT Kanpur in 1969 and has taught as regular or adjunct faculty at IIT(Kanpur), Imperial College (London), University of California (Los Angeles), Cal Tech (Pasadena), and Cal State (Northridge). In 1979, Dr. Runchal established the ACRi group of companies (www.acricfd.com) that now has offices in Los Angeles (USA), Nice (France) and Bangalore (India). Core expertise of ACRi is Engineering, Environmental and Space Sciences. Over the past 40 years. ACRi has provided advanced technology and CFD Simulation services to over 200 clients that include major corporations, R&D organizations, and governments in over 20 countries.*

For the past 50 years, Dr Runchal, has consulted extensively on projects related to flow, heat and mass transfer, combustion, environmental impact, management of air, surface and ground water resources, safe disposal of hazardous and nuclear waste, and, policy and decision analysis. He is the principal author of the ANSWER®, PORFLOW®, TIDAL®, and RADM™ CFD Software Tools that are widely employed by commercial, academic and R&D organizations. He obtained a Bachelor's in Engineering with Honors from Punjab Engineering College (Chandigarh) in 1964. He is the author or co-author of 12 books and over 200 technical publications. Dr. Runchal has received professional honors and awards and has delivered keynote and invited talks at more than 100 international conferences and seminars. He is a Fellow of the ASME, a member of ASTFE and has served as Chairman of the IIT Kanpur Foundation Board. He was a member of the IIT Gandhinagar Advisory Board from 2012 to 2019. He has acted as an Advisor to Government of India and the Indian Army and, a number of educational institutes in their R&D and Industrial Relations Programs.

Dr. Runchal grew up in the scenic hill town of McLeod Ganj, Dharamsala that is now on the world map as the hometown of His Holiness the Dalai Lama. Since 2006 he has been deeply engaged in reviving the lost heritage of Kangra Miniature Paintings through Kangra Arts Promotion Society based in McLeod Ganj. In 2011, Dr. Runchal founded a non-profit CFD Virtual Reality Institute (www.CFDVRI.org) to further the cause of CFD education, training and R&D. He divides his time between Los Angeles and McLeod Ganj and is actively engaged in promoting education, training and R&D in CFD and related disciplines.

Keynote 5: Solid Particle Self-assembly in Time-Periodic Flows: new Concepts to Manipulate Matter on Small Scales

By: Prof. Marcello LAPPA, University of Strathclyde, Glasgow, UK.

Application-driven technological demands require vastly superior control of particles and other inclusions dispersed in many inorganic and organic materials when they are in the liquid state. We present a survey of recently discovered mechanisms for solid particle self-assembly, ordering and accumulation in non-isothermal laminar time-periodic fluid flows, potentially inherent to exerting such a control. Assuming surface-tension gradients and vibrational effects as the main mechanisms driving fluid flow, an attempt is made to disentangle the complex hierarchy of relationships existing between the multiplicity of the loci of particle aggregation, the geometry of the physical domain hosting the considered fluid-particle mixture, the physical properties of the particles per se and the applied thermal boundary conditions. We show that the particle self-organization processes in time-periodic thermal flows obey a complex logic, which makes the arrangement of particles different from realization to realization. As some influential conditions or parameters are varied, particles can be gradually transferred from the region of influence of an attractor to another. Moreover, ranges exist where these “attractee” compete resulting in overlapping or intertwined particle structures. The final objective is the integration of new physics in already existing theories and forge a new unified concept for the (contactless) manipulation of solid matter dispersed in a fluid, which may lead in the future to alloys with improved properties or perhaps completely new materials.



Prof. Marcello LAPPA: is the Director (main Programme Advisor) of the MSc course in Mechanical Engineering at the University of Strathclyde (public British University located in the center of Glasgow, UK). He is listed in the “World Ranking of Top 2% Scientists in 2022” Stanford University database in the subfield Fluids & Plasmas. Over the last 25 years, he has authored 3 international books (2004, Elsevier Science, Cambridge; 2009, John Wiley & Sons, Chichester; 2012, John Wiley & Sons, Chichester), more than 130 publications in high impact-factor peer reviewed journals or as book chapters (most of which as single author, http://www.researchgate.net/profile/Marcello_Lappa/publications) and 60 other conference and technical papers. His research focuses on fluid motion and stability behaviour, computational fluid dynamics, incompressible and compressible fluid flows, organic and inorganic materials sciences and crystal growth, multiphase flows, solidification, high-temperature gas-dynamics, particle dynamics and microgravity science. On September 2013 he attained a qualification (habilitation) to the rank of Full Professor in Italy. He joined the Department of Aerospace and Mechanical Engineering of the University of Strathclyde as an Associate Professor in 2015 (Academic grade 9). On Oct 2017 he took on the role of Director of the MSc course in Mechanical Engineering (Programme Advisor of Studies) and later he

was given the highest UK Academic title (Full Professor). Over recent years he has secured (in a position of PI) over £ 2 million of external funding. He seats in the Steering Committees of several conferences (ICTEA, ICCES, ICFVM, ParCFD, ICOME, ICCMREA, AMT, ICMAPH) and acts as a Reviewer for several funding bodies (EPSRC-UK, DFG-Germany, FNRS-Belgium, GIF-Israel, ANVUR-Italy, NSERC-Canada, NVSTE-Kazakhstan and ESA). Since 2005 he serves as the Editor-in-Chief of the international scientific Journal "Fluid Dynamics and Materials Processing" (ISSN 1555-256X), currently being indexed in Scopus and the ESCI index of Clarivate Analytics' Web of Science.

Keynote 6: The Balbi model, a simplified physical propagation model for surface fires, development and applications

By: Dr. François Joseph CHATELON, University of Corsica, France

The Balbi model is a simplified physical surface fire behaviour model which takes into account both radiation and convection as heat transfer modes. The model, developed at the University of Corsica, is faster than real time and then it could be used in operational tools for firefighters or people involved in fire management. The model has no model parameters and only depends on fuel characteristics, the topography and meteorological conditions. The last version of the model is as simple as empirical models found in the literature. Because of its simplicity and its quickness, it represents a good candidate for an incorporation into a coupled fire/atmosphere simulator. The model has known several developments: definition of non-propagation criteria, prediction of fire eruption's triggering and definition of safety zones widths when it was coupled to the acceptable safety distance analytical model developed at the University of Corsica.



Dr. François Joseph CHATELON: is an associate professor in applied mathematics at the University of Corsica, France, where he got his PhD (1996). Prior to entering the field of wildland fire he worked in the areas of fluid mechanics and physical oceanography, solving the Navier-Stokes and shallow water equations. His three main areas of research interests are: 1) Development of a physical simplified surface fire spread model called 'the Balbi Model'.
 2) Development of sub-models which take the convective flow induced by the fire into account.
 3) Investigations on fire eruption's occurring.

Keynote 7: Emerging technologies & innovations for a sustainable energy industry

By: Dr. Mohamed TABAA, R&D and LPRI Laboratory Director, EMSI Casablanca, Morocco

The industry of the future comes to accelerate the modernization of the industrial tool, in the context of the deployment of new technologies. IoT, Artificial Intelligence, Big Data Analytics, Digital Twins, virtual & augmented reality, and advanced technological tools must collaborate for the foundation of the new industrial model. They constitute an opportunity to improve the attractiveness of different industrial applications. Buildings, charging stations, factories and industrial zones are considered the main consumer of energy sources in urban areas. Over the decades, electricity generation has undergone several evolutions, moving from decentralized to centralized energy and arriving at distributed energy with the integration of renewable sources. The integration of renewable energy sources has been considered as an alternative option used by governments instead of upgrading traditional power stations. This is due to the availability of renewable energy sources and their advantages, including cost effectiveness, inexhaustibility, and reduced greenhouse gas emissions. As for modernization, it is indeed about integrating new technologies to improve energy production and consumption. In this talk, we will present the evolution of industrial sectors using new technologies impacting both the production and consumption of energy.



Dr. Mohamed TABAA: *is IEEE and ACM Member. Received the degree of engineer in telecommunication and networking from the EMSI Casablanca, Morocco, and master in radiocommunication, and embedded electronic systems form university of Paul Verlaine of Metz, France. He received his Ph.D degree and HDR (Habilitation à Diriger des Recherches) diploma in electronics systems from university of Lorraine Metz, France. Since 2015, he has been the director and founder of the LPRI private Laboratory attached to the EMSI Casablanca, Morocco. His research interests include array of digital signal processing for wireless communications, embedded systems, Energy and IA. He has served on the Organizing Committees and Technical Program Committees of several international conferences, including IEEE ICM, IEEE REPS&GIE, IEEE Systol, TMREES, POWER AFIRCA, INTIS, ASD, JDSI, FIoE. He is the editor of several special issues: Elsevier AEU - International Journal of Electronics and Communications, Sustainability and Energies.*

Symposium Speakers

Topic 1: Waste derived biomaterials and biostimulants for sustainable agriculture

By: Prof. Petronia CARILLO, University of Campania "L. Vanvitelli" ITALY



Prof. Petronia CARILLO: is a Full Professor of Agronomy at the Department of Environmental, Biological and Pharmaceutical Sciences and Technologies of University of Campania "Luigi Vanvitelli" Caserta Italy since 2020. She was Associate Professor of Plant Physiology (2010-2020) and permanent Researcher of Plant Physiology (1999-2010) at the Department of Life Sciences, Second University of Naples, Italy. She received her Ph.D. in Plant Physiology from the University Federico II of Naples in 1996, studying the relationship between nitrogen and carbon metabolism in plant cells. She received her degree with distinction in Biology from the University Federico II of Naples in 1992. She was Visiting Scientist in September 2017 and June 2018 at the INRA (UMR 1332 - Biologie du Fruit et Pathologie) Bordeaux Aquitaine France; Visiting Professor (Erasmus+ program) at the Plant and Agrobiosciences Center (PABC) of the National University of Ireland Galway in June 2015; Visiting Scientist in 2001-2020 (2-4 months per year until 2010 and shorter visits in 2011-2020) at the Max Planck Institute of Molecular Plant Physiology of Golm-Potsdam Germany, and in in 2001 (4 months) at the Botanical Institute, Ruprecht-Karls-University of Heidelberg Germany. She teaches Agronomy, Plant physiology and Post-harvest physiology. She is member of editorial board for international journals (Frontiers in Plant Science, Agronomy, Plants), and has been reviewer of research projects for international programs (FP7-KBBE 2008, 2009, 2010; ANR, France 2010, 2014; ERA-CAPS 2012, 2013; BMBF 2010, 2013, 2015, 2017). She has thirty years of research experience in laboratory and a strong background and knowledge in crop physiology, enzymology and metabolic profiling. She has studied the metabolic and physiological responses of species of agronomic interest to nutrient deficiency, salt stress, type of cultivation. Recently, she has focused her studies on the effects of biostimulants on the resource efficiency, growth yield quality and stress tolerance of crop plants. She has authored more than 100 scientific publications and has been ranked in the Stanford University list of top 2% scientists worldwide published by PLOS Biology.

Topic 2: Photonics for Energy

By: Prof. Jean-Michel NUNZI, Queen's University, Canada

Dr. Hassina DERBAL HABAK, Picardie J.V. University, France

Research on the applications of photonics for renewable energy is at the forefront of actual discoveries and innovation. All the light spectrum is concerned, from the UV down to the microwave range. Research encompasses light harvesting, conversion, storage, distribution, monitoring, consumption, and its efficient use. We expect that the symposium will stimulate new research and collaborations in the core of this new edition of ICOME 2023.



Prof. Jean-Michel NUNZI: he is graduated from l'Ecole de Physique et Chime, Paris in 1982, he joined l'Ecole Polytechnique for a PhD on the nonlinear optics of surface plasma waves (plasmons). He was then hired as full-time Researcher in Organic Photonics at the Atomic Energy Commission (Saclay) in 1984. He joined the Department of Physics at the University of Angers as Professor in 2000, where he built the Plastic Solar Cells Technology Research Team. He moved to Queen's University as Tier 1 Canada Research Chair in Chiral Photonics in 2006, renamed Photonics for Life in 2013. He studies Organic Photonics, including the Chemistry, Processing and Physics of nanomaterials and devices. He continuous to innovate the news process for PV cells and match between



Dr. Hassina DERBAL HABAK: she obtained her graduated on "Capteurs Optiques et Instrumentations from University of Angers and made her PhD thesis in same University in the same Laboratory PHIA. She worked on elaboration and characterization of structured organic solar cells. She demonstrated the relation between morphology, physico-chemical and electrical characteristics of the cells. She studied and used new materials as C60' derivatives and Carbon Nanotubes for improving solar cells' performance. She worked as professor associate in Ecole des Arts et Métiers d'Angers. She joined the Laboratoire Angevin de Mécanique, Procédés et innovation in the same structure. She Joined for her Post-Doc IM2NP and LPCIM-Ecole Polytechnique. She studied new solar cells based on CNT or Silicon amorphous as electrodes. She had interest into interface effects on I-V parameters and optical characteristics. She is Full Professor associate in University of Picardie Jules Verne-France from Laboratoire de Technologie Innovante LTI. She undertakes in several project concerning new generations of solar cells in terms of new materials in thin photoactive layers or to use a bio-sourced materials as substrates. She is working also on the coupling between Thermal cells and Solar PV cells.

Topic 3: Fire physics and simulations

By: Dr. Sofiane MERADJI, University of Toulon, France

Dr. Jean-Louis ROSSI, University of Corsica, France

Dr. Thierry MARCELLI, University of Corsica, France

Over the last few decades, considerable efforts have been focused on developing and implementing statistical and physics-based models to account for the interactions between fire, vegetation, and the atmosphere. These models have led to a better understanding of the dynamics of fire spread in a landscape and are continuing to contribute to the state of art of wildfire science. However, despite considerable progress in modeling fire behavior, wildfires occur in complex environments where multiple parameters interact to influence its behaviour at a variety of spatial and temporal scales. Despite the wide use of these models, many have experienced some limitations. The main problem today is the existence of high intensity fire events, that are very difficult to control and can overwhelm suppression capabilities. It was reported by scientists that only 5% of these past years forest fires caused the most important damages. These so-called extreme fires seem to become a new standard. Thus, wildfires can still create unexpected scenarios for emergency services during real situations and result in significant injury, even fatalities, in addition to the numerous socioeconomic and the irreversible ecological impacts. Wildfires in wildland-urban interface communities have also rapidly grown in occurrence and strength over the past few decades due to the growing pace of urbanization and landscape transformation. Recently, using data assimilation and deep learning techniques to better predict wildfire behavior has aroused considerable interest. These emerging approaches coupled to standard models seem very promising. This special event offers an opportunity for those involved in fire safety science and wildfire / wildland urban interface fire behavior to present their work. The target audiences for this program are graduate students, post-doctoral fellows, and researchers and engineers, engaged in fire science and fire safety research programs. The adopted viewpoint in the program is primarily (but not exclusively) engineering based. The objectives are to expose a broad range of advanced topics with a mix between fundamental aspects (underlying physical and chemical mechanisms) and the current challenges related to the mitigation of the negative impacts of these extreme fires. Submissions are encouraged on, but not limited to, the following topics: Fuel flammability, fire spreading, fire dynamics, fire suppression, wildland fires and large outdoor fires, enclosure fire dynamics, wildfire risk assessment and management, fire risk analysis and fire safety design, wildland Urban Interface, human evacuation and behavior, environmental impacts of fire, sustainability, CFD simulation and modeling, AI / Deep Learning and/or data assimilation.

*Authors will be invited to submit the final version to the following MDPI Special Issue Journals: https://www.mdpi.com/journal/atmosphere/special_issues/wildfires_modeling
https://www.mdpi.com/journal/fire/special_issues/35NV4A118M*



Dr. Sofiane MERADJI: holder of a PhD in Computational Fluid Mechanics, obtained at the University of Aix-Marseille II in 1999, I started my research activity around the theme of forest fires, in 2006, during the European project FIRE PARADOX. Since 2010, I am a Research Engineer in Scientific Computing at the University of Toulon, in a laboratory of Applied Mathematics and Computer Science. My research focuses on the fire physics and tools development on HPC architectures.



Dr. Jean-Louis ROSSI: (h-index : 15 ; i10-index : 17) is an Associate Professor (HDR) at the University of Corsica, France, where he got his PhD (1996). Prior to entering the field of wildfires, he worked in the area of modeling underwater sound scattering phenomena. His three main research topics are: 1) Development of a physical simplified surface fire spread model. 2) Development of models of radiant heat from shrub. 3) Development of safety distance models to address firefighter safety zones.

The motivation of his current work is to develop better tools for operational applications. For instance, these tools could be used when addressing fire management, such as defining fuel-break areas and firefighter safety zones at field scale. From 2018 is a part of the UNDRR international expert advisory group (E-STAG) as a Forest Fire expert.



Dr. Thierry MARCELLI: is an assistant professor at the University of Corsica, France, where he got his PhD in 2002. He is teaching fluid mechanics and energetics at the University Institute of Technology in the Civil Engineering Department. Since 2002, he has been working on wildland fire behavior thanks to a simplified approach and a multiphase formulation. Since January 2020, he has been the co-manager of the GOLIAT project which is devoted to provide operational tools for fire-

fighters and forest managers. This project is funded by the "Collectivité de Corse" and the French State (CPER: 40031).

Invited Lecturers

Topic 1: Integration of a photovoltaic device on nonconductive surfaces using thermal spray Coatings

By: Dr. Yamina MEBDOUA LAHMAR, Center for Dev. of Adv. Tech. (CDTA), Algeria

The supply of electricity is a key-requisite for all modern societies; its production has to be efficient and environmental friendly. Scenarios within the next 30 years [1] project that the development of renewable energy sources will increase significantly; renewable electricity generation meets incremental demand growth [1]. Which makes it essential to carry out development of materials and processing to improve efficiencies and performance of energy generation systems. Thermal spray coatings have high potential use for energy systems such as boilers, components of gas turbines and steam power plants, fusion reactors, solid oxide fuel cells, thermoelectric devices and other devices for the capture of renewable energy. The use this technology in renewable energy applications is of great interest, mainly due to their cost-benefit aspect and their flexibility. This coating technology is potentially industry-scalable. In this context, thermal spray technology was introduced in PV cell conception aiming to integrate photovoltaic device on nonconductive surfaces particularly on wood surface. A conductive layer is created on the wood surface, which can be used as a back electrode for a solar cell. The experimental work was combined to a numerical study predicting the characterizations of different types of PV devices. [1] U.S. Energy Information Administration (EIA) Annual Energy Outlook 2022.



Dr. Yamina MEBDOUA LAHMAR: is working as a director of research, head of the thermal spraying technology platform at the Center for Development of Advanced Technologies (CDTA) in Algiers, Algeria and a member of the Scientific Council (CS) of this establishment.

Completed Magister of astrophysics from Saad DAHLAB University - Blida, Algeria. Awarded with Ph.D in Ceramic Processing and Surfaces Treatments in 2008 from Limoges University-France, followed by a university habilitation (HDR) from Saad DAHLAB University-Blida. She possesses several years of experience in research activity in the field of plasmas and thermal spraying at the CDTA. She trained a research team on thermal spraying and set up a technological platform for thermal spraying processes. She also headed a research division on ionized media and lasers (DMIL) at the CDTA during three years.

Her research activities have been organized into research projects whose involved members are multidisciplinary including students. She has led several research projects: on the design of a microwave plasma reactor for surface treatment application, on the applications of thermal spraying in surface treatment and on the development of thermal barrier coatings on industrial parts. She has numerous publications on these processes but also on transversal subjects through PhD supervision.

Topic 2: Legal models for alternative energies: energy communities in European law

By : Prof. ALDO AMIRANTE, Uni. degli studi della Campania "L. Vanvitelli", Italy

The DIRECTIVE (EU) 2018/2001 on the promotion and use of renewable energy sources has set the production of renewable energy at 32% by 2030 for European countries. The need to reduce dependence on fossil fuels finds increasing space in European programs, through incentives for research and above all for the production of renewable energies, to the point of outlining forms of possible production in aggregate forms, such as the Renewable Energy Communities (REC) . The directive establishes a series of concessions and criteria for the development of energy communities, without determining a defined economic model. The implementation of the directive, in Italy, is quite complex, and, the creation of energy communities cannot find an adequate legal position, also due to the indeterminacy of the directive in this regard. We want to verify whether the creation of a new institution, apparently easy to implement, could lead to a universally valid system, which can be implemented regardless of the legal characteristics of the implementing country.



Prof. Aldo AMIRANTE: Adjunct professor and full-time researcher of international law, Department of Political Sciences, University of Campania "L. Vanvitelli ".

Lawyer, member of the Bar Association of S. Maria C.V.

Professor of the course International Law and EU Law for Tourism from 2011 to date.

Subsequently professor of international and EU law for tourism.

Assigned to the European Union Law Course at the Department of Letters and Cultural Heritage of the University of Campania "L. Vanvitelli ".

Visiting professor at the National Polytechnic University of Lviv, (Ukraine), July 2018.

Erasmus Program Visiting Professor at the Jagellonian University in Krakow, Poland, May 2019.

Lecturer in international law, international humanitarian law, navigation law at various military training centers.

Research in the field of war law, the protection of human rights for the mentally disabled, Studies in the field of energy and energy communities,

Member of numerous scientific research groups.

Member of the scientific committee of the ARTETETRA editions.
Member of the scientific committee of the European series Documents-monuments of identity, Sec. Right, culture, society, ICCU - Department of Political Sciences
Speaker at numerous scientific conferences, national and international.
Former legal consultant for municipalities, public bodies and businesses.
M.Sc. in Law.
PhD. in Law, Second University of Naples.

Topic 3: Advances in modeling and experimentation of the thermal behavior of heating systems: from open foams to floor heating systems

By : Dr. Abdelatif MERABTINE, EPF Ecole D'Ingénieur-e-s, France

The analysis of the thermal behavior of systems, whatever their scales, is vital to better understand the thermo-mechanical aspects. Open foams, heat exchangers, radiant heat slab are all an illustration of what we call heat sinks and that systems among others are involved in mobility and energy transition concerns. In this presentation, I will show some recent numerical and experimental investigations on studying the thermal behavior of the thermal systems in order to estimate some critical operation parameters affecting the thermal management system. The sensitivity studies are depicted in order to identify the optimal design parameters and to derive a new simplified model for design purposes.



Dr. Abdelatif MERABTINE: since 2013, he is Associate Professor at EPF School of Engineering (Troyes - France) attached to Laboratory of Mechanical & Material Engineering (LASMIS) at University of Technology of Troyes (France). He is in charge of an experimental platform BBC+ including a full-scale monitored test cell facility that he has designed and developed. Abdelatif Merabtine has obtained his PhD in Mechanical engineering at Lorraine University (France) in 2012. He then found a lecturer position at the Department of Civil Engineering at Ecole Normale Supérieure de Cachan where he has spent one year (2012-2013). Abdelatif Merabtine conducts his research on experimental analysis of the heat transfer at different scales of building's envelope as well as the energy performance of the Heating, Ventilation and Air Conditioning (HVAC) systems. He also does research on multi-optimisation of the energy efficiency of buildings including HVAC systems for thermal comfort purposes.

Topic 4: Control and Optimization Opportunities in the Integration of Renewable Energy into the Complex Energy Systems

By: Dr. Bilal AMGHAR, ESTP Paris Engineering School, France

A substantial reduction of greenhouse gas emissions is necessary to maintain the balance of our ecosystem. The use of renewable energy sources (RES) recognized today as an appropriate response and durable solution. This is the main reason for the occurrence of smart grid, designed to provide a reliable electricity supply and better quality to consumers. 'Smart grids' or 'intelligent grids' are electricity grids that adjust electricity flows between suppliers and consumers, using IoT tools. They therefore match the production of electricity with its distribution and consumption. The goal? Reap economic and environmental benefits. On the other hand, the increase in the number of electric vehicles and the development of heat pumps will have a significant impact. If special measures not taken, these new needs, and in particular the recharging of electric vehicles, may considerably increase instantaneous energy consumption. However, smart grid can change this problem to a solution. The electric vehicles are not only consumer; they are also a valuable resource, thanks to the storage possibilities of their batteries. This system consists of using the battery of an electric vehicle as an extension of the distribution grid, energy stores from which the electricity supplier can draw from time to time. In this context at ESTP Paris, we have a 100 kW smart grid test bench that reproduces the same energy constraints as a 19-storey urban building with the aim of raising awareness among engineering students on the place of renewable energies in the future. This device designed to meet teaching, research and innovation objectives.



Dr. PhD. Eng Bilal AMGHAR: *is an Assistant Professor and Head of the Electricity Laboratory at ESTP Paris Engineering School 28 avenue du President Wilson-94234 Cachan Cedex Such: 01 49 08 5644, Email:bamghar@estp-paris.eu-www.estp.fr Engineer (2008), Master in Electrical Engineering (2009), PhD in electrical engineering (2013) University of Cergy, Mr AMGHAR Bilal is a specialist in energy and the smart city.*

During his first professional experience, he was responsible for European projects in particular BCAPP qualified Business Check APPLication and participated in academic and industrial research projects (Hyro+, Seinerger Lab, SMART GRID, etc).He has also supervised several theses on energy mixes (Microgrid, Smartgrid, On-board energy, etc)

After a first experience of 9 years in a school of the ECAM group, he is currently an Assistant Professor in the field of SMART CITY and SMART GRID at ESTP Paris. He is also responsible of the electricity laboratory and the SMART GRID platform at ESTP Paris.

ICOME23 AWARDS

Best Presentation Award

The ICOMÉ event want to reward involvement, merit and professionalism of young scientist students. An award of better presentation (Phd) will be provided for each sessions and consist on the ICOMÉ medal and free fees for the next ICOMÉ edition.

On 2021 Wolfram Mathematica award involvement and merit of young scientist students doing research using theoretical/Mathematical approach. Priority is given to student using Symbolic computing.

Averroes Award

The new edition of the Averroes¹ prize will take place at this conference, and aims to highlight a scientist or a decision maker who contributed significantly to the development and vitality of international scientific partnership with results, training of young researchers going to scribing the action in a permanent way.



“Ignorance leads to fear, fear leads to hatred and hatred leads to violence. That is the equation”

(Averroes, 1126-1198)

¹ Averroes (Ibn Rochd) European intellectual, born in Spain, died in Morocco, both a philosopher, a theologian, a lawyer, a mathematician and a 12th century Andalusian doctor

AVERROES PRIZES



2020/2021: Geoffrey LEVERMORE, Emeritus Professor, UK.



Geoffrey LEVERMORE: Emeritus Professor of the Built Environment. Author of about 130 refereed journal papers, 44 invited papers and lectures and 25 book chapters and books. He was an investigator on grants worth £14.53m, 17 with UK Research

Councils worth £12.75m, PI on 12 worth £ 2.27m. Chair of the Task Group and editor of CIBSE Guide

A Environmental Design, Chapter A2 External Design Data 1999, 2006 and 2013. In 2007 he was one of the Lead Authors of the Intergovernmental Panel on Climate Change (IPCC) awarded the Nobel Peace Prize with Al Gore. From 2002 to 2009 he was Co-ordinator of Working Commission W108: 'Impact of climate change on the built environment' of the CIB. In 2010 he was awarded a CIBSE Silver Medal. He is still researching part-time, analysing climate change, the urban heat island and building energy use. He has published 22 papers since 2011. He has given seven Keynote Speeches to conferences in Turkey, Dubai, France and China since 2017 and is a member of the Daikin European Konwakai which recently met in Japan.



2019: Abdelilah BENYOUSSEF, member of the Moroccan Academy of Science and Technology (Hassan II)



Abdelilah BENYOUSSEF: received his (Doctorat d'état) degree from the Paris-Sud University in 1983. He is a permanent member of the Moroccan Hassan II Academy of Science and Technology, since 2006. He

is associate professor in the materials and nanomaterials center of the Moroccan Foundation for Advanced Science, Innovation and Research. He is National coordinator of the Competences

Pole of Condensed Matter and Systems Modeling. He is also an editor in chief of the Moroccan Journal of Condensed Matter. He is President of the Moroccan Society of Statistical Physics and Condensed Matter. He has been visiting professor in many centers, laboratories and Universities. The main interest topics of Abdelilah Benyoussef are Ab initio calculation and Monte carlo method in modeling and simulation of new materials for renewable energy; Magnetism and phase transition in condensed matter; complex systems and critical self-organization in statistical physics. He is a co-author of more than 400 research publications and book chapters and about 100 conference presentations including numerous invited papers and talks.

2018: Sassi BEN NASRALLAH, Presidential award in 2003



Sassi BEN NASRALLAH: *born in 1955, Sassi Ben Nasrallah is a doctor in physical sciences. He joined higher education as an assistant professor at ENIS and then as a lecturer and was then promoted to the post of Professor of Higher Education at ENIM. He has contributed a lot to teaching, especially research, since in 1999 he created the Laboratory of Thermal and Energetic Systems, which is one of the most renowned laboratories both nationally and internationally. He is the author of more than 300 scientific articles in major journals, and he supervised several PhD students. Sassi Ben Nasrallah won a presidential award in 2003. The professor has also led several research projects as well as scientific meetings. He has been a professor in both Tunisian and French universities, and is well known for his studies at the Central School of Paris, IMFT Toulouse, Mine's School of Nantes and many others. Sassi Ben Nasrallah founded and chaired the Tunisian Energy Association (ATE). The Ministry of Higher Education announced, on June 30 2017, the death of Sassi Ben Nasrallah, professor of higher education at the National School of Engineering of Monastir.*



2017: Abdul Majeed MOHAMAD, Education Excellence awards



Abdul Majeed MOHAMAD: Professor in Eastern Mediterranean University, Cyprus (1993-1999). Since 2000 he is Prof. of thermofluid in Dept. of Mechanical Engineering, University of Calgary, Canada. Dr. Mohamad held few admin positions, director for Centre for

director of graduate studies, acting Environmental Engineering Centre for Research and Education. Dr. Mohamad has been invited by many institutes around the world (France, Germany, China, USA, Poland, Saudi Arabia, Canada, Portugal, Morocco, Tunisia, Turkey, Indonesia, and Ecuador), as invited Professor and lecturer. He is one of the highly cited researches. Dr. Mohamad elected Fellow Member of American Society of Mechanical Engineer (ASME). Scientific council member of International Centre for Heat and Mass Transfer. He has been awarded Research Excellence and Graduate Teaching Excellence awards from University of Calgary, Dept. of Mechanical Engineering, Canada.

2016: Michel COMBARNOUS, French Academy of Sciences



Michel COMBARNOUS: Professor "Emeritus" at the University of Bordeaux has been associate professor at the University of Gabès (Tunisia) (2006-2011). A specialist in fluid mechanics and energetics, he was encharged of the Department «

Engineering Sciences » at CNRS (1980-1985). He is a founding member of « Académie des Technologies », and Corresponding Member of the Academy of Sciences, since 1978 (www.academie-sciences.fr). Prof. Combarnous has accomplished a huge cooperative work involving north-south Mediterranean cooperation

ICOME 23 PROGRAMME

INTERNATIONAL CONFERENCE ON MATERIALS & ENERGY International Conference 2023 - CASERTA Italy



<https://webhorloge.it/heure/>

Central Europe local time CET	08:30	09:00 10:00	10:00	10:45	10:45 11:15	11:15	12:00	12:00	13:15	13:15 14:00	14:00	14:45	14:45	16:15	16:45	16:45	18:30	20:00
Tuesday May 30th	Registration	Opening Ceremony ICOME23 (Main Room)	Keynote N'1 Y. Jaluria Main Room Chair: Mohammed El Ganaoui	Coffee Break	Keynote N'2 GL. Morini Main Room Chair: Rachid Bennacer	Session A Energy Systems I Chair: A.Saad Room 7		Lunch Break	Keynote N'3 F.J. Chatelon Main Room Chair: Sekkat Zouhair	Symposium n. 1 Fire physics and simulations Chair: S. Meradji Room 7		Session D Innovative Materials I Chair: S.Mounir Room 7	Relax	Gala Dinner	Session C Waste & Biomaterials Chair: D.Guilbert Room 8		Session E Computational Methods Chair: B.Chegari Room 8	
						Session B Biomaterials/ Bioarchitecture Chair: S. Morsli Room 8				Symposium n. 2 Waste derived biomaterials and biostimulants for sustainable agriculture Chair: P. Carillo Room 8								
Wednesday May 31st	Registration	Keynote N'4 M. Lappa Main Room Chair: Biagio Morrone	Keynote N'5 M. Minale Main Room Chair: Helene Ageorges	Coffee Break	Session F Heat Mass Transfer in Buildings I Chair: M. Minale Room 7		Lunch Break	Lecturer: Y. Mebouda Lamar Session H Innovative Materials III Room 7		Online session OS I Chair: H. Bernhamed Room 7	Relax	Guided Tour of the Royal Palace Caserta	Free evening	Session G Innovative Materials II Chair: H.Park Room 8		Session I Energy Systems II Room 8		
					Session J Heat Mass Transfer in Buildings II Room 7			Lecturer: B. Amghar Session I Energy Systems I Room 8										
Thursday June 1st	Registration	Keynote N'6 A. Runchal (Online) Main Room Chair: Mohammed El Ganaoui	Keynote N'7 M. Tabaa Main Room Chair: Souad MORSLI	Coffee Break	Lecturer: A. Merabtine Session J Heat Mass Transfer in Buildings II Room 7		Lunch Break	Symposium n. 3 Photonics for Energy Chair: J.M. Nunzi Chair H. Derbal Room 8		Session L Phase Change Materials & Energy Storage Chair: H. Mastouri Room 7	Online Session OS II Chair: S.Morsli Room 7	Student Award & Closing Ceremony Main Room		Lecturer: A. Amirante Session K Energy Systems III Room 8		Session M Other Topics Chair: A. Zaoui Room 8		
					Lecturer: A. Merabtine Session J Heat Mass Transfer in Buildings II Room 7			Lecturer: A. Amirante Session K Energy Systems III Room 8				Session M Other Topics Chair: A. Zaoui Room 8						



SCHEDULED ID – SESSION

ID	Session	Code	ID	Session	Code	ID	Session	Code
1	OS	OnlineSession	50	D	InnoMat I	99	OS II	OnlineSession II
2	OS	OnlineSession	51	K	EnSyst III	100	G	InnoMat II
3	OS	OnlineSession	52	K	EnSyst III	102	J	HMTBuild II
4	E	CompMetME	53	B	BioMat	103	G	InnoMat II
5	E	CompMetME	54	I	EnSyst II	104	M	Other
6	H	InnoMatIII	55	M	Other	105	L	PCMenStor
7	K	EnSyst III	56	E	CompMetME	106	G	InnoMat II
8	E	CompMetME	57	M	Other	107	M	Other
9	E	CompMetME	58	C	WasteDer	108	H	InnoMat III
10	M	Other	59	C	WasteDer	109	H	InnoMat III
11	OS II	OnlineSession II	60	E	CompMetME	110	J	HMTBuild II
12	L	PCMenStor	61	I	EnSyst II	111	C	WasteDer
13	M	Other	62	B	BioMat	112	A	EnSyst I
14	E	CompMetME	63	I	EnSyst II	113	L	PCMenStor
15	OS II	OnlineSession II	64	I	EnSyst II	114	M	Other
16	F	HMTBuild I	65	B	BioMat	115	L	PCMenStor
17	Symp3	Symposium 3	66	D	InnoMat I	116	OS	OnlineSession
18	L	PCMenStor	67	M	Other	117	OS II	OnlineSession II
19	F	HMTBuild I	68	OS II	OnlineSession II	118	A	EnSyst I
20	OS II	OnlineSession II	69	OS	OnlineSession	119	F	HMTBuild I
21	OS II	OnlineSession II	70	E	CompMetME	120	M	Other
22	L	PCMenStor	72	OS	OnlineSession	121	OS	OnlineSession
23	F	HMTBuild I	73	M	Other	122	Symp1	Symposium1
24	D	InnoMat I	74	M	Other	123	M	Other
25	K	EnSyst III	75	G	InnoMat II	124	B	BioMat
26	B	BioMat	76	I	EnSyst II	125	L	PCMenStor
27	C	WasteDer	77	G	InnoMat II	126	J	HMTBuild II
28	D	InnoMat I	78	E	CompMetME	127	OS II	OnlineSession II
29	K	EnSyst III	79	B	BioMat	128	Symp1	Symposium1
30	C	WasteDer	80	E	CompMetME	129	OS II	OnlineSession II
31	D	InnoMat I	81	M	Other	130	OS II	OnlineSession II
33	OS	OnlineSession	82	H	InnoMat III	131	Symp1	Symposium1
34	OS	OnlineSession	83	G	InnoMat II	132	Symp1	Symposium1
35	K	EnSyst III	84	J	HMTBuild II	133	Symp3	Symposium3
36	K	EnSyst III	85	G	InnoMat II	134	H	InnoMat III
37	B	BioMat	86	C	WasteDer	135	Symp3	Symposium3
38	F	HMTBuild I	87	L	PCMenStor	136	B	BioMat
39	F	HMTBuild I	88	I	EnSyst II	137	OS	OnlineSession
40	OS II	OnlineSession II	89	J	HMTBuild II	138	Symp1	Symposium1
41	OS II	OnlineSession II	90	C	WasteDer	139	J	HMTBuild II
42	D	InnoMat I	91	I	EnSyst II	140	OS	OnlineSession
43	F	HMTBuild I	92	A	EnSyst I	141	Symp3	Symposium3
44	B	BioMat	93	B	BioMat	142	Symp3	Symposium3
45	D	InnoMat I	94	I	EnSyst II	143	L	PCMenStor
46	OS II	OnlineSession II	95	A	EnSyst I	144	H	InnoMat III
47	M	Other	96	A	EnSyst I	145	A	EnSyst I
48	M	Other	97	M	Other	146	M	Other
49	OS	OnlineSession	98	G	InnoMat II	147	A	EnSyst I
						148	A	EnSyst I
						149	E	CompMetME

DETAILED PROGRAMME

ID	Authors	Title	Session Code
Energy Systems			
EnSyst I (Chair: A. Saad)			
96	Feriel Mustapha, Damien Guilbert	A Comprehensive Review Of Emerging Energy Storage Technologies For Renewable Energy Sources And Transportation Applications	A
92	Wafaa Yahya, Hassan Radoine, Hicham Mastouri	Positioning Of Green Hydrogen In The New Green City Of Bengrir, Morocco	A
95	Pamela Ramirez Vidal, Marco Avila Lopez, Victor Hugo Cantu Medrano	Modelling The Hydrogen Production By Methane Pyrolysis	A
112	Antonio Mariani, Andrea Unich, Mario Minale	A Multizone Combustion Model For Hcci Engines Fuelled By Biogas Containing Hydrogen	A
118	Alaa Elouazani Dahak, Taha Yassine Samir, Abdelghani El Asli, Hicham Mastouri	Green Building Certification	A
145	Pasquale Contestabile, Gaetano Crispino, Antonio Mariani, Luigi Rubino, Antonio Panico, Andrea Unich, Corrado Gisogni, Furio Cascetta, Diego Vicinanza	Optimal Siting Of Obrec Wave Farms: A Case Study In West Of Sardinia (Italy)	A
147	Luigi Sequino, Bianca Maria Vaglieco	Comparative Analysis Of Innovative Cooling Systems For Li-Ion Cells Using Carbon-Graphene Coatings, Metal Foams And 3D Printing	A
148	Christian Antetomaso, Adrian Irimescu, Elio Jannelli, Simona Silvia Merola, Bianca Maria Vaglieco	Relevance Of The Gdl Design On Water Removal In Pem Fuel Cells	A
EnSyst II (Chair : B. Amghar)			
54	Wissal Herra, Hicham Mastouri, Abdelghani El Asli, Manuel Carlos Gameiro Da Silva, Claudio Del Pero, Hassan Radoine	Inferential Monitoring-Based Study Of Indoor Air Quality Assessment For Biobased Heating System In Mountainous Cold Climate	I
61	Lamine Arfang Sarr, Pape Moussa Touré, Vincent Sambou	Photovoltaic Production And Energy Consumption Of A Residential Building	I
63	Noussaiba Rharbi, Abdelghani El Asli, Hassan Radoine, Hicham Mastouri, Manuel Carlos Gameiro Da Silva	The Suitability Of Adapting Certification Tools For Moroccan Context: A Study Case Of Ifrane And Benguerir Cities	I
64	Leslie Ayagapin - Bertil	Can Electric Vehicles Be A "Sustainable" Solution For Insular Territories? A Life Cycle By Analysis Approach	I
76	Badr Chegari, Mohammed El Ganaoui	Optimal Energy Management Of A Hybrid Renewable Energy System	I
88	Khwla El Hadri, Bassam Moujalled, Hicham Mastouri, Abdelkader Outzourhit, Hassan Radoine	Summer Comfort And Passive Cooling Techniques By Natural Ventilation: Case Study Of Um6P Classrooms	I
91	Mourad Benfares, Mohammed Benbrahim, Izeddine Zorkani	Climate Change Effect On The Performance Of The Different Grid-Connected Photovoltaic Systems	I
94	Assunta Andreozzi, Bernardo Buonomo, Yogesh Jaluria, Oronzio Manca	Transient Analysis Of External Ambient Effect In Summer And Winter Conditions On Ventilated Roof	I
EnSyst III (Chair : A. Amirante)			
25	Soumia Mounir, Youssef Maaloufa, Badr Saad Alotaibi, Abdelhamid Khabbazi, Elina Mohd Husini, Syala Nurul Abdul Latip, Yakubu Aminu Dodo, Mohammed Awad Abuhussain, Sara Ibn Lhai, Mina Amzal, Asmae Souidi, Ahmed Aharoune	Energy Efficiency Of A Proposed Solar Green Building Model In Dry Climates	K
7	Sarir Noureddine, Sebaa Morsli, Allaoui Tayeb	Improvement Of Electric Power Quality In The Grid-Connected Wind Generation Using Heuristic Method	K
29	Amira Mhadhbi, Mohammed El Ganaoui, Haikel Ben Hamed, Amenallah Guizani	Numerical Study Of The Effect Of Non-Newtonian Behavior Of Al2O3/Water Nanofluids On Their Heat Transfer In An H-Shaped Enclosure	K
35	Biagio Morrone, Domenico Cirillo, Maurizio La Villetta, Carmine Caputo, Paolo Bracciano	Exergy And Economic Analysis Of A M-Cogeneration System Coupled With Biomass Gasifier	K
36	Mame Cheikh Diouf, Mactar Faye, Ababacar Thiam, Vincent Sambou	Modelisation Of Module Temperature Using The Response Surface Method (Rsm)	K
51	Hind Sarghini, Sara Ibn-Elhaj, Yassine Ennaciri, Sara Ladouy, Abdelhamid Khabbazi	Experimental Investigation Of Humidification Deshumidification Desalination System Coupled With Heat Pump	K
52	Latra Boumaraf, Chérifa Abid	Influence Of The Position Of An Ihx On The Performance Of A Double Evaporator Ejector Refrigeration System	K

Materials & Applications			
BioMat (Chair : S.Morsli)			
37	Noussaiba Rharbi,Abdelkader Outzourhit,Hicham Mastouri,Abdelghani El Asl,Hassan Radoine	Impact Of Design, Construction, And Usage Stages On Building Performance: Case Of Marrakech Prefecture Headquarters	B
62	Safae Oulmouden,Hassan Radoine,Hicham Mastouri,Brahim Benhamou	Building Systems Optimization And Strategy Assessment For An Energy Efficient Model Of Buildings: Case Study Of Residential Building In Benguerir City In Morocco.	B
65	Loubna Ait Lahsen,Hicham Mastouri,Mohamed El Mankibi,Hassan Radoine	Evaluation & Optimization Of The Amount Of Solar Energy Received By The Envelope Of Rural Buildings During Winter Season : Case Study Of High Atlas Mountains In Morocco	B
79	Khaoula Benaomar,Abdelkader Outzourhit,Hicham Mastouri,Mohamed El Mankibi,Karim Limam	Building A Climate-Resilient Future: Examining The Interaction Between Built Environment And Energy Use	B
136	Lagrouch Loubna,Taha Yassine Samir,Abdelghani El Asli,Hicham Mastouri	Construction Net Zero (Riba, Leti...) Et Solutions Pour Les Pays En Voie De Developpement	B
26	Oumaima Khachchane,Soumia Mounir,Abdelhamid Khabbazi,Sarra Ibn Lhaj,Youssef Maaloufa	Thermo-Mechanical Characterization Of A New Ecological Material Based On Reed And Clay	B
44	Yamna Soussi,Houda Er-Retby	The Impact Of Bio-Sourced Materials On Indoor Thermal Comfort In A Semi-Arid Climate	B
53	Doha Belfadil,Souad Zyade	Extraction Processes Of Chitosan From Shrimp Shell Waste From Morocco Local Market	B
93	Saray Perez-Robles,Claudia Carotenuto,Mario Minale	Hydroxypropyl(Methyl)Cellulose Hydrogel Stability For Thermal-Enhanced Oil Recovery	B
124	Salma Kouzzi,Salma Lahmar,Mohammed El Ganaoui,Mohammed Lhassane Lahlaoui	Optimization Of Insulation Thickness Of Eco-Materials In Building'S External Wall Using Trnsys Simulation	B
InnoMat I (Chair: S. Mounir)			
24	Youssef Maaloufa,Soumia Mounir,Sara Ibnelhaj,Mohammed Awad Abuhussain,Abdelhamid Khabbazi,Yakubu Aminu Dodo,Badr Saad Alotaibi,Asma Souidi,Mina Amazal,Naima Ben Brahim,Malika Atigui,Ahmed Aharoune	Thermomechanical Characterization Of Hollow Concrete Brick With Sheep Wool	D
28	Hajar Dahhan,Kettani Kamal	Experimental Studies Of A New Composit Material Based On Plaster And Ppe Waste	D
31	Naima Ben Brahim,Youssef Maaloufa,Soumia Mounir,Abdelhamid Khabbazi,Sara Ibn Elhaj,Hind Sarghini,Oumaima Khachchane	Thermomechanical Study Of A New Composite Material Based On Plaster And Natural Additives: Sheep Wool And Cork	D
42	Walid Laifa,Tahar Ali Boucetta,Mourad Behim	Effect Of Fibers On The Behavior Of Self-Compacting Concrete	D
45	Mehdi Zrarou,Hicham Mastouri,Hassan Radoine,Hassan Chenouati,Mouad Dahbi,Youssef Tamraoui,Brahim Benhamou,Abdelkader Outzourhit,Gaetano Casadei,Araujo Nicita,Manuel Cadar,Cassio De Silva	Low-Cost Panels From Natural Fibers For Improved Buildings Thermal Performance: Inferential Review	D
50	Sara Ibn-Elhaj,Fatima Zohra El Wardi,Soumia Mounir,Hind Sarghini,Abdelhamid Khabbazi	Study Of Thermal Inertia And Insulation Of An Ecological Material Based On Clay	D
66	Naima Ben Brahim,Youssef Maaloufa,Soumia Mounir,Abdelhamid Khabbazi,Sara Ibn Elhaj,Hind Sarghini,Oumaima Khachchane	Thermomechanical Characterization Of A New Composite Material Based On Plaster And Natural Additives: Sheep Wool And Cork:	D
InnoMat II (Chair: H.Park)			
75	Najah Majouri,Jalila Sghaier,Mohamed El Mankibi	Thermal And Physical Characterization Of Earthen Bricks Made From Clay And Date Palm Fibers Intended For The Thermal Insulation Of Buildings.	G
77	Abdelmalek Kriba,Farid Mechighel,Mohammed El Ganaoui	Numerical Modeling Of The Influence Of Sps Device Geometry On Thermoelectric And Mechanical Behavior	G
83	El Mehdi El M'Harmache,Hicham Mastouri,Hassan Radoine,Claudio Del Pero,Niccolo' Aste	Green City Of Benguerir: Toward A Sustainable And Eco-Friendly Model Of An Innovative Built Environment	G
85	Ibrahima Diaw,Mactar Faye,Stéphane Hans,Frédéric Sallet,Seckou Bodian,Vincent Sambou	Influence Of Gum Arabic And Recycled Lime On The Mechanical Performance Of Typha-Cement Concrete.	G
98	Raffaella Griffo,Arianna Parisi,Gianluigi De Falco,Mariano Sirignano,Francesco Di Natale,Mario Minale,Claudia Carotenuto	Wettability And Morphological Properties Of In-Flame Deposited Carbon Nanofilms.	G
100	Fabiana Graziano,Ciro Tortora,Sara Coppola,Veronica Vespi,Simonetta Grilli,Pietro Ferraro	Fluid Manipulation Using Innovative Materials: P-Jet And Polymeric Thin Films	G
103	Adel Boulemaizet	Value-Added Reinforcement With Plastic Waste Sheets In Reclaimed Asphalt Pavement Performances	G
106	Walid Khelifi,Ismaen Zaid	Comparative Study On The Properties Of High Performance Concrete Based On Expanded Clay Aggregate And Natural Aggregate	G
InnoMat III (Chair : Y Mebouda)			
108	Ismaen Zaid,Mouloud Merzoud,Amar Benazzouk	Effect Of Diss Fibers Addition On The Mechanical Behavior Of Lime Composite	H
109	Najah Majouri,Jalila Sghaier,Mohamed El Mankibi	Thermal And Physical Characterization Of Earthen Bricks Made From Clay And Date Palm Fibers Intended For The Thermal Insulation Of Buildings	H
6	Hajar Nassiri,Youssef Messouss,Rachid El Bouayadi	Precipitation Synthesis Of Cr Doped Tio2 For Dye-Sensitized Solar Cell Application	H
82	Wendong Li,Mourad Rahim,Mohammed El Ganaoui,Rachid Bennacer	The Dynamic Strategy Of Phase Change Materials Integrated Into The Building Envelope For Improving The Building's Thermal Performance	H
134	Marcin Maleta,Wojciech Gluchowski,Zbigniew Rdzawski,Marek Łagoda,Justyna Domagala-Dubiel	Effect Of Recycling Copper Addition And Semi-Continuous Casting Speed On Crystal Size And Mechanical Properties Of Copper	H
144	Walid Khelifi,Ismaen Zaid	Comparative Study On The Properties Of High Performance Concrete Based On Expanded Clay Aggregate And Natural Aggregate.	H

WasteDer (Chair: D. Guilbert)			
58	Giovanna Marta Fusco,Rosalinda Nicastro,Youssef Rouphael,Petronia Carillo	Protein Hydrolysates From Food Waste May Sustainable Boost Agriculture Yield And Quality	C
59	Rosalinda Nicastro,Christophe El-Nakhel,Giovanna Marta Fusco,Danny Geelen,Youssef Rouphael,Stefania De Pascale,Petronia Carillo	Use Of Urine Derivatives For Sustainable Agriculture	C
86	Souheila Hangri,Grazia Policastro,Ouiem Baatache,Antonio Panico,Ludovico Pontoni,Kerroum Derbal,Massimiliano Fabbriano	Combining Pretreatments As Successful Approach To Maximize Biohydrogen Production From Dairy Cow Manure	C
27	Annalinda Capone,Biagio Morrone,Maria Laura Mastellone,Lucio Zaccariello	Sewage Sludge Bio-Hydrogen Production Boost By Anaerobic Fermentation Using Htc Liquid	C
30	Larbi Belagraa,Nassima Bakir,Ammar Noui,Oussama Kessal,Inda Nor	Valorization Of Industrial Slag Addition For Sustainable Mortar Formulation Based On A Prepared Sand And Admixture	C
111	Lucio Zaccariello,Maria Laura Mastellone,Biagio Morrone,Annalinda Capone	Preliminary Test Of Sewage Sludge Hydrothermal Carbonization In A Pilot-Scale Reactor	C
90	Imane Mannan,Hassan Radoine,Hicham Mastouri	Multistage Implementation To Improve Bioenergy From Wastewater Treatment In African Housing	C
Heat and Mass Transfer			
HMTBuild I (Chair: M. Minale)			
16	Chahrazed Abdellahoum,Amina Mataoui	Numerical Comparison Of Forced Convection With Hybrid Cu-Al2O3 Nanofluids Traversing A Rectangular Cavity With K-Wsst Turbulent Modeling	F
19	Hanane Sghouri El Idrissi,Mohammed Taibi,Izeddine Zorkani	Experimental Study Of The Thermal And Acoustic Properties Of Oil Shale From Timahdit-Morocco	F
23	Molka El Maghraoui,Rasul Mohebbi,Majdi Hazami	Free Convection Heat Transfer Of CuO/H2O Nanofluids In A Square Cavity With A Conductive Separation Using The Lattice Boltzmann Method.	F
38	Khaled Mahdi,Nadir Belle,Khalida Bekrentchir	Cfd Simulation And Optimisation Of The Efficiency Of A Spiral Tube Under Focused Beam By A Solar Dish	F
39	Mohameth Dia,Mamadou Salif Diallo,Vincent Sambou	Consideration Of The Convection Coefficient On The Estimation Of Thermophysical Parameters Of Materials By The Hot Plate Method	F
43	Ikram Mostefa Tounsi,Amina Sabeur,Mustapha Boussoufi,Mohamed El Ganaoui	Impact Of The Inlet Flow Angle And Outlet Placement On The Indoor Air Quality	F
119	Herie Park,Rachid Bennacer	Influence of Hybrid Ventilation on Energy Consumption and Air Quality of Buildings	F
HMTBuild II (Chair: A. Merabtine)			
84	Najwa Ben Bouchaib,Hicham Mastouri,Hassan Chehouani,Hassan Radoine,Claudio Del Pero,Niccolo' Aste	Convective Heat Transfer Coefficient Measurement In Modern Moroccan Buildings	J
89	Victor Cantu Medrano,Florian Puel,Pamela Ramirez Vidal,Marco Avila Lopez	Simulation Tool And Optimization Approach For Hydrogen Supply Chain Design In France 2030	J
102	Yasmine Hamrioui,Zouhira Hireche,Lyes Nasser,Rachid Nebbali,Rachid Bennacer,Djamel Eddine Ameziani	Lbm Simulation Of The Residence Time Of Polluting Particles In A Ventilated Chamber	J
110	Lahoucine Gourdo,Hicham Fatnassi,Khadija Achgar,Hassan Demrati,Ahmed Wifaya	Heating Requirements For A Canarian Greenhouse	J
126	Khalid Chtaibi,Mohammed Hasnaoui,Haikel Hamed,Abdelkhalak Amahmid,Youssef Dahani	Dual Mrt-Lbm Analysis Of The Magnetic Field Effect On Natural Convection Of A Non-Newtonian Ferro-Fluid Confined Between Square And Circular Cylinders	J
139	Assia Arab,Zouhira Hireche,Nabil Himrane,Djamel Eddine Ameziani	The Effect Of The Porous Separation Height On The Pollutant Removal In Ventilated Rooms: Lbm-Mrt	J

Computational Methods			
CompMeth (Chairs : B.Chegari)			
4	Marouane Essahraoui,Rachid El Bouayadi,Mohammed El Ganaoui,Aouatif Saad	Numerical Analysis Of The Effect Of Three Slats Distributed Along The Rear Windward And Leeward Of Ahmed Body	E
5	Marco Avila Lopez,Leila Aklouche,Victor Hugo Cantu Medrano	Pem Fuel Cell System Modelling For Aircraft Vehicle At Cruise Conditions	E
8	Achraf Sakout Andaloussi	Different Fouling Thickness Effect On Outlet Temperature In Counter Flow Heat Exchanger	E
9	Daniele Ricci,Michele Ferraiuolo,Francesco Battista,Manrico Fragiaco	Thermal And Thermo-Structural Analyses Regarding The Hyprob Lox/Lch4 Demonstrator Manufactured By Means Of Electroplating Process	E
14	Asmaa Bouich,Najat Rafalia,Jaafar Abouchabaka	Prediction Of World Energy Consumption By Using Ai	E
56	Houda Er-Retby,Zineb Zoubir,Mohamed Oualid Mghazli,Mohamed El Mankibi	Indoor Environment'S Quality Ieq Forecasting For A Residential Building Using Machine Learning Models	E
60	Bilal Amghar,Asma Achrib,Heri Park	Optimal Control Of Decentralized Smart-Grids Systems	E
70	Hamza Benzine,Yasmine Achour,Hicham Labrim,El Houssaine Ouabida,Ahmed Ait Errouhi,Aouatif Saad,Rachid El Bouayadi,Driss Zejli	Development Of A Microclimate Control Model For Optimized Agricultural Greenhouse Design	E
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80	Mohammed Said,Noura Nait Bouda,Souad Harmand	A Numerical Approach Of Taylor Flow In Microchannel: A Comparative Study.	E
149	Abdelkarim Ou-Khouya,Adil Houba,Imane Ait Brahim,Hassane Mes-Adi,Mohamed Tahiri	The Effect Of Chalcogens-Doped With Dilation Strain On The Electronic, Optic, And Thermoelectric Properties Of Perovskite Basio3 Compound	E
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11	Samy Alami,Abderrahman Nait Alla,Lahcen Bammou,Monssif Najim,M'Barek Feddaoui	Salt Water Film Evaporation With Combined Heat And Mass Transfer In The Presence Of Nanoparticles Within A Vertical Flow Channel	L
12	Majid El Kassaoui,Abdelilah Benyoussef,Abdallah El Kenz,Mohammed Louidi,Omar Mounkachi	Solid-State Materials As A Promising Hydrogen Storage Medium	L
15	Abdeljalil Belazreg,Abderrahmane Aissa,Mohammed Sahnoun,Zied Driss,Mohammed El Ganaoui	Effects Of A Tree-Shaped Fin Design On Shell-And-Tube Nephcm In A Thermal Energy Storage Unit For Waste Heat Recovery	L
18	Saif Serag,Biagio Morrone,Adil Echhelh	Hydroelectric And Hydrogen Storage Systems For Electric Energy From Renewable Sources	L
22	Mourad Abed,Abderrahmane Aissa,Mohammed El Ganaoui,Zied Driss,Salah Abid	Numerical Study Of The Melting Process In A Customized Shell-And-Tube Phase Change Material Heat Storage System	L
87	Oumaima Zga,Hassan Radoine,Hicham Mastouri	Geothermal Potentials Of Improving Energy Efficiency In Buildings In Semi-Arid Climate: The Pebbles Bed Thermal Storage	L
105	Ibtissam El Aouni,Yasmine Achour,El Houssaine Ouabida,Ahmed Ait Errouhi,Hicham Labrim,Aouatif Saad,Rachid El Bouayadi,Driss Zejli	An Optimization Of A Humidification-Dehumidification Desalination System Driven By Renewable Energy	L
113	Hicham Mastouri,Abdelghani El Asli,Zaineb Chouaib,Khawla Rouis	Edge Green Building Certification For A Clinic In Taounat, Morocco	L
115	Sanaa Mazouar,Hafida Ziouani,Abdelilah Taoufik,El Mostafa Khechoubi,Mahmoud Ettakni	Structural Polymorphism In Hybrid Material Perovskite	L
125	Said Laasri,Mourad Rkhis,Samira Touhtouh,El-Kébir Hlil,Abdelouahed Hajjaji	Computational Design Of Zirconium-Nickel Based Materials For Hydrogen Storage Applications	L

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67	Ikram Belmehdi, Mohamed Djermouni, Boumediene Beladjine	Evaluation Of The Co2 Capture Technology In Steam Methane Reforming For Hydrogen Production	M
73	Meryem Oulad Goumi, Meriem Bamaarouf, Laila Saafadi	Hydrodynamic Study Of A New Geometric Shape Of The High Efficiency Algal Reactor	M
97	Simona Moliatierno, Pasquale Marino, Elio Coppola, Roberto Greco, Claudia Carotenuto, Mario Minale	How Rainfalls Modify The Organic Carbon Content Of A Soil Affecting The Rheology Of Its Slurry	M
10	Abdelkader Boutra, Abderrahmane Bourada, Youb Khaled Benkahla, Rachid Bennacer	Multiple-Relaxation-Time Lattice Boltzmann Approach For Flow And Convective Heat Transfer In Open Cavity With Circular Heat-Generating Obstacle	M
13	Osman Adiguzel	Lattice Reactions And Structural Changes Governing Reversibility In Shape Memory Alloys	M
146	Radouane En-Nadir, Haddou El-Ghazi, Hassan Abboudi, Izeddine Zorkani	Nonlinear Dynamics Of Ingan/Gan Heterostructure Inharmonic Oscillator Under Applied Electric Field And Intense Laser Field	M
120	Jihad Louafi, Lhaj Hachemi Omari	Structural And Optical Properties Of Lafewo6 Double Perovskite-Type Oxide	M
48	Ahmed Sbaibi, Yousuf Bandadi, Rachid Saadani	Receptivity And Control Of Tollmien Schlichting Waves In A Subsonic Boundary Layer	M
74	Asma Souidi, Youssef Maaloufa, Mina Amazal, Malika Atigui, Slimane Oubeddou, Aicha Idoum, Soumia Mounir, Ahmed Aharoune	Physical And Chemical Characterization Of Mussel Shells For Using In Construction Field	M
104	Aicha Idoum, Lahcen Bammou, Ahmed Aharoune	Thermal And Mechanical Behavior Of Calcareous Clay Bricks At High Sintering Temperature	M
107	Youssef El Mrini, Jamal Zerouaoui, Badia Ettaki	Energy Management Of An Hybrid System	M
114	Nassima Bakir, Larbi Belagraa, Khelifa Abbeche	Study Of The Effect Of The Addition Of Glass Fiber On The Variation Of The Capillary Pressure And Failure Of A Collapsible Soil	M
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123	Ghliem Maria	Monte Carlo investigation of the three-dimensional mixed spin Ising model with multispin coupling	M
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2	Soukaina Ed-Dahri	Hysteresis Loops Of Magnetic Nanoparticles, Monte Carlo Approach	OS
3	Alexander Lukin	Improving The Electron Transportation Cooling Efficiency By Fine-Tuning The Collective Atomic Vibrations Within The Multilayer Low-Dimensional Nanocarbon Transition Nano-Enhanced Interfaces	OS
33	Mactar Faye, Sidy Fall	Field Study On Thermal Comfort In Hot Tropical Zones	OS
69	Hamza Benzine, Yasmine Achour, Hicham Labrim, El Houssaine Ouabida, Ahmed Ait Errouhi, Aouatif Saad, Rachid El Bouayadi, Driss Zejli	Energy Design And Optimization Of Greenhouse By Natural Convection	OS
72	Mina Amazal, Soumia Monir, Asma Souidi, Malika Atigui, Slimane Oubeddou, Youssef Maaloufa, Ahmed Aharoune	Elaboration And Characterization Of A Composite Based On Plaster And Juncus Plant Fibers In Morocco	OS
116	Chaimaa Khouya, Rachida Idchabani, Abdellilah Jilbab, Chakib Bojji	Optimization Of Energetic And Environmental Performances Of A Building Using Lca Approach: A Moroccan Case	OS
34	Farah Zemani, Amina Sabeur	Heat Transfer By Natural Convection In An H-Shaped Cavity Filled With Al2O3 Water-Based Nanofluid With A W-Shaped Fin	OS
140	Yassine Rahib, Dominique Cancellieri, Valérie Leroy-Cancellieri, Jean-Louis Rossi, Jacky Fayad, Eric Leoni	Combustion characteristics of forest fuels with an emphasis on fire hazard evaluation	OS
49	Ramzi Fenouche, Ahmed Ouadha	Numerical Study On Flow Boiling Heat Transfer Characteristics Of Ammonia In Horizontal Tube	OS
1	Mahdi Goucem, Bilal Bouazdia, Abdelkader Seghier	Influence Of The Ambient Temperature On The Efficiency Of Gas Turbines	OS
121	Yousra Amellas, Mohammed Saidi Hassani Alaoui	The Study And Prediction Of The Behavior Of Meteorological Parameters In The Course Of Current Climate Change Using Artificial Intelligence Methods	OS
137	Abdou Raimi Olayimika Ichola Alakouko, Clarence Semassou	Development And Thermophysical Characteristics Of A Filling Concrete Reinforced With Cotton Ginning Clods	OS

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20	Lina Wafaa Belhadj Senini, Moustapha Boussoufi, Amina Sabeur	Heat Transfer And Fluid Flow Simulation Of Different Nano-Fluids In Micro-Cylinder-Groups	OS II
21	Aissa Abderrahmane, Sahnoun, Mohammed El Ganaoui, Abid Salah, Zied Driss	A Numerical Study Of Nanofluid Mhd Natural Convection In A Complex-Shaped Porous Enclosure	OS II
40	Nassim Mahfoudh Sahraoui, Samir Houat, Mohammed El Ganaoui	Numerical Study Of Mixed Convection In An L-Shaped Enclosure	OS II
41	Nassim Mahfoudh Sahraoui, Samir Houat, Mohammed El Ganaoui	Multiple-Relaxation-Time Simulation Of Mixed Convection In An Open T-Shaped Cavity	OS II
11	Samy Alami, Abderrahman Nait Alla, Lahcen Bammou, Monssif Najim, M'Barek Feddaoui	Salt Water Film Evaporation With Combined Heat And Mass Transfer In The Presence Of Nanoparticles Within A Vertical Flow Channel	OS II
68	Lahoucine Ouhsaine, Mohammed El Ganaoui	Thermal Characterization Of Building Walls Using The Time Scaling Model: A Practical Approach To Heat Transfer Dynamics	OS II
46	Abdelkerim Kaddour, Ahmed Ouadha	Entropy Assessment Through Computational Investigation Of Cavitation In Venturi Tube	OS II
99	Mohamed Djermouni, Ahmed Ouadha	Feasibility Study Of An Orc Driven Reversed Osmosis High Pressure Pump	OS II
117	Farid Mechighel, Sadik Dost, Mohammed El Ganaoui	Numerical Simulations Of The Effect Of Presence Of Free Surface On The Solidification Of An Organic Phase Change Material Under Microgravity Conditions	OS II
127	Syrine Khadrawi, Fakhreddine Oueslati, Haikel Ben Hamed	Increase In Heat Transfer And Temperature Homogenization In A Solar Channel Partially Filled With Metal Foams	OS II
129	Ibtissem Mhamdi, Haykel Ben Hamed, Fakhri Segni Oueslati	3D Numerical Simulation Of A Salt Gradient Solar Pond	OS II
143	Karim Ragui, Lin Chen, Rachid Bennacer	Transient Dynamics Of Invaded Supercritical Carbon Dioxide With Cluster Of Pollutants In Porous Media	OS II

SYMPOSIA PROGRAMME

Fire Physics and Simulations (Symposium 1)			
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131	Frédéric Antoine-Santoni, Claude Devichi, Arielle Syssau-Vaccarella, Jean-Louis Rossi	Preparing Firefighters To Manage Emotions And Stress During Population Evacuations In Natural Disaster Situations	Symp1
132	Thierry Marcelli, Lucile Rossi, Jean-Louis Rossi, François-Joseph Chatelon, Jacky Fayad, Dominique Cancellieri, Valérie Cancellieri, Lila Ferrat, Frédéric Morandini, Antoine Pieri, Antoine Burglin, Dominique Morvan, Gilbert Accary, Sofiane Meradji, Michel Battesti, Vincent Ruiz, Sébastien Blanc, Patrice Briot, Gilles Planelles, René Costantini	Goliat, A Project To Improve Knowledge And Develop Tools For Firefighting And Land Use Planning	Symp1
138	Sofiane Meradji, Nicolas Frangieh, Gilbert Accary, Jean-Louis Rossi, Dominique Morvan, Thierry Marcelli, Joseph Chatelon	Fuelbreak effectiveness against wind-driven and plume-dominated fires: A 3D numerical study	Symp1
128	Jean-Louis Rossi, Jacky Fayad, François-Joseph Chatelon, Thierry Marcelli, Sofiane Meradji, Dominique Cancellieri, Yassine Rahib, Gilbert Accary, Dominique Morvan, Lucile Rossi, Patrice Briot, Antoine Pieri, Frédéric Morandini	Separation Safety Distances Assessment In Wildland Urban Interfaces	Symp1
Waste-derived biomaterials and biostimulants (Symposium 2)			
Chairs: P. Carillo			
	Petronia Carillo	Policy and legislation on waste-derived biomaterials for sustainable agriculture	Symp2
	Maria Antonietta Rao	Digestate transformation in vermicompost for a sustainable management of agricultural soils	Symp2
	Youssef Rouphael	Plant-derived biostimulants for sustainable agriculture: a global perspective	Symp2
Energy Mat. & photonic (Symposium 3)			
Chairs : H. Derbal, J. M. Nunzi			
17	Izeddine Zorkani, Redouane En-Nadir, Haddou El-Ghazi	Theoretical Simulations of InGaN/GaN Multiple Quantum Wells for Photovoltaic and Optoelectronic application	Symp3
133	Dariusz Kolač, Wojciech Gluchowski, Zbigniew Rdzawski, Marek Łagoda, Marcin Maleta, Karol Krukowski	Effect of microadditives on selected properties of magnesium copper after deformation	Symp3
135	Zouheir Sekkat	Plasmonic Sensing And Switching: Fano, Pit And Mim Resonances	Symp3
141	Abdelkadir Zaitte, Naoual Belouaggadia, Cherifa Abid, Ahmed Kaiss, Oumaima Imghoure	Enhanced radiative cooling of solar cells by a combination of radiative and photovoltaic collectors	Symp3

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