Program book

International Conference on Materials & Energy & symposium ICAPM

July 6 – 9, 2017
Tianjin, CHINA

MATERIALS & ENERGY

ICOME'17

International Conference On Materials and Energy
Tianjin, China
July 06 – 09, 2017
ICOME'17

Organised by

天津商業大學
TIANJIN UNIVERSITY OF COMMERCE

ENS CACHAN

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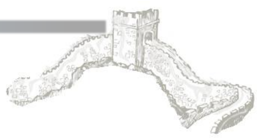
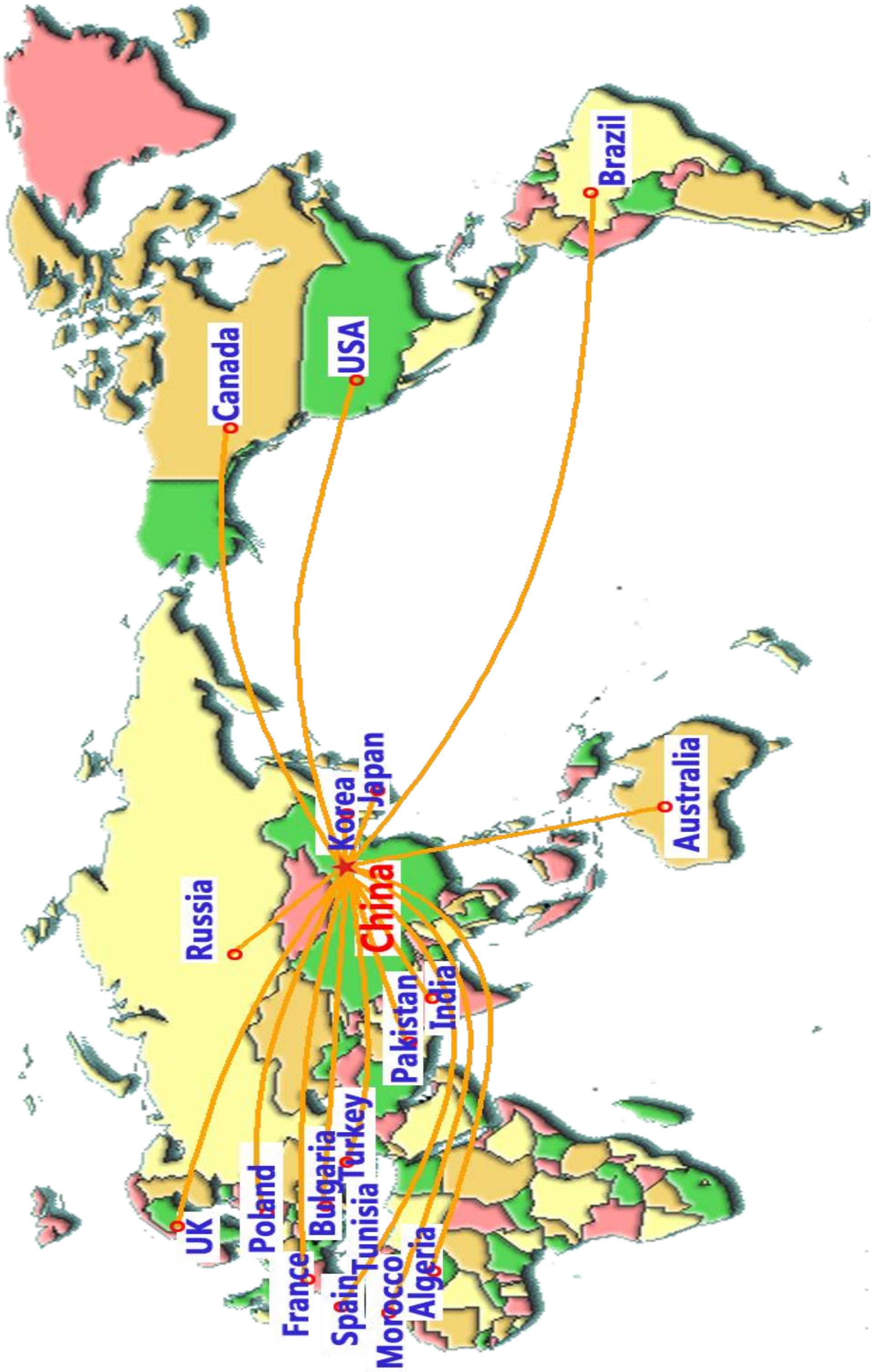


International participation



Thanks for the Tianjin City and the TUC for the support

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Welcome / 欢迎

After the success of the International Conference on Materials & Energy(ICOME'15)in the beautiful North Mediterranean city of **Tétouan** in Morocco, and the edition 2016 in the beautiful Atlantic city of **La Rochelle**, France. ICOME'17 moves to Eastern part China in **Tianjin**.

Natural coupling of materials and energy is a strong point of this event. This is an interconnected topic with very fecund fields of application in our modern society.

The Euro-Mediterranean and Asian link is also an important fact of this international conference and it will allow a better mixture to share innovation and sustainable development. ICOME 17 Host also an international Symposium on Porous Media and Applications dedicated to the updated state of the art on porous media research and innovation.

The conference chairs hope that everyone will find in this meeting an important topic of interest, a great pleasure in exchanging with both communities of materials and energy.

The Chairs thank Professors. Wenquan Tao (Chinese academy of Sciences), Michel Combarnous (French academy of Sciences) for being Honorary Chairs of the ICOME 17 edition.

国际材料能源会议继2015年在地中海区域摩洛哥名城得土安举办，和2016年在大西洋沿岸城市法国拉罗谢尔成功召开之后，2017年将于中国天津隆重召开。

材料和能源的是本届会议的两大重要主题，其与现代社会的生产应用领域联系非常紧密。

欧洲-地中海和亚洲大陆之间的区域交流也是本届国际会议的亮点，将使我们在全世界范围内更好地分享科技革新成果和可持续发展领域的最新研究进展。本次会议还将同时举办国际多孔介质及其应用的专题讨论会，重点交流和展示多孔介质研究成果和技术创新的最新进展。

大会主席衷心祝愿两个领域的专家学者通过本次会议交流科研成果，共同探讨未来材料能源领域的发展方向。

最后，大会特别感谢中国科学院院士陶文铨教授和法国科学院院士 Michel Combarnous 教授担任本届 ICOME17 会议的名誉主席。

GENERAL ICOME SERIE'S CHAIRS

Prof. R. Bennacer

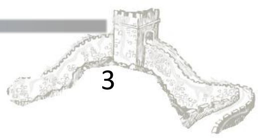
Prof. M. El Ganaoui

Local ICOME'17 CHAIR

Prof. B. Liu Prof.

Int. ICAMP Symp. CHAIR

Prof. A.A. Mohamad



Foreword / 前言

Human kind is living in a particular time of history with a rapid technology evolution. It is enough to compare the access to information and devices between a child, his father and his grandfather.

The close relationship between materials and energy concepts reveals the power that can change personal habits, societal behavior and human balance. The permanent loop of energy /materials interaction exerts influences on all civilizations and at all scales.

The manifestation of this essential link in every great work is largely based on scientific ideas and technological implementation of principals of nature understanding and mastering since antiquity with water and fire, until our days with mastering of nuclear power and its material support. In ancient times, regardless of Babylonian, Greek, Persian, philosophers from the Qin dynasty of China have contributed significantly to the prosperity of science such as mathematics 'jiǔzhāng suànshù' or technics (i.e., Zhang Heng).

The power of mathematics and its universality as well as the mutual influence with the other sciences are and will remain the foundation of scientific works. It is also the hope of tomorrow to overcome the progress which stops as consequence of resources lack.

This could be the responsibility of scientists from different countries, with different languages, from various disciplines or schools of thought. To secure the continuity of the progress, their exchange, their encounters, their ethics and independence from the benefit of progress for human society are all necessary.

The meetings ICOME (International Conference of Materials and Energy) are within this objective and seeking a share of the latest scientific advances. It aims to meet ongoing initiatives and be an amplifier for young researchers, first by the recognition and the realization of the importance of the basic foundation, then by training which has its place in this event.

ICOME 17 hosts also a highlighting symposium in porous media (ICAPM), which is dedicated to advances on this field and especially on the computational solutions. So many initiatives to ensure that for the pyramid of knowledge to making big sense in the way of knowledge, which has enabled man to save his spirit and accelerate its progress. The scientist in his quest for truth is accompanied by ethics, acceptance of difference in points of view, the socio-economic cost and innovation constraints.

In this sense, the conference award, is related to Averroes universal thought and is dedicated to reinforce this vision of a man who puts the truth beyond beliefs and allegiances of its time, the intelligence beyond the interest of the use: " *it is quite adequate for common design practice; it should be the food of the people; however it is insufficient, to the intelligence*." (Averroes).

The 2016 edition took place in the City Atlantic la Rochelle succeeding to 2015 edition that took place in the Mediterranean city of Tétouan. It was dedicated to two key aspects, materials & energy, for the control of the environmental impacts of the activities related to transport and habitation. Indeed, eco-materials and sustainable construction have been a key topic in view of the current and future issues of the energy transition and sustainable development. This 2017 edition has made the choice to meet the Euro-Mediterranean and Chinese cultures. These two cultures who have given so much contributions to humanity in materials management and an efficient use of energy. It is held in Tianjin city, a port of trade since old times and one of the major centers of development of the aerospace industry in China. It is a symbol of continuity with the Mediterranean (Tétouan 2015) and the Atlantic (La Rochelle 2016) editions.

This conference will allow scientists and industrialits captains to shed the light, not only on the links between the energy issues and those dedicated to materials, but also to take stock of the latest scientific, technological and industrial advances. ICOME 17 brings together more than 250 participants from different institutions, Chinese, French and international (European, American, Asian and African) as well as several industrial partners very sensitive to the issues of innovation to improve their competitiveness.

The chairs and members of the Organizing Committee of the ICOME 17 wish all present an excellent stay in Tianjin, fruitful exchanges and everyone finds what he expects of this edition.

Prof. R. Bennacer
ENS Paris-Saclay

Prof. M. El Ganaoui
University of Lorraine

前 言

人类社会正处在科技变革进程中的一个特殊历史阶段，与我们的父辈以及祖父辈稍作比较便可发现，当代人获取信息的途径和使用的材料的情况已不可同日而语。

材料制造离不开能源动力，能源的使用又源于材料技术的进步和革新，二者之间的密切关系和无尽循环，在多重尺度上深深地影响着人们的行为习惯社会关系以及人类文明进程。

从远古时期使用水源和火种，到如今掌握核能及其应用材料技术，人类历史进程中每一次伟大的进步都离不开对科学观念的深入理解和对自然物质的合理利用。从巴比伦、希腊、波斯到中国先秦的思想家，彼时的文明古国在众多领域都对科学技术的进步和发展做出过举足轻重的贡献，例如数学著作《九章算术》、技术创新的典型人物张衡。

作为一种科学研究的强有力工具，数学的普适性及与其他学科的交融互补性，使其现今和将来均注定是科技进步的坚实基础。此外，在某些可以预见的因资源短缺而被迫停止的工业技术中，数学也是未来克服这些发展瓶颈的希望所在。世界各国的科技工作者，虽然地域、语言、思想、学派不同，但却有着共同的科学使命，沟通交流促进了成果的共享，彼此相互独立又不乏思想碰撞，这种形式的交流很大程度上促进和保证了社会科技的进步历程。历届的 ICOME（国际材料与能源会议）都以此为宗旨，努力创造一个最新科研成果共享与交流的舞台。会议旨在通过认可基础研究的重要性为该领域研究者提供展示和沟通的机会，调动和发挥参与者的主观能动性，为青年科研人员提供一个成果展示和交流互动的平台。ICOME 17 的主办方将同时举办多孔介质研讨会（ICAPM），此会议致力于多孔介质相关领域尤其是在数值计算方面的最新科技进展和研究成果的展示和交流。

基础性研究和科技成果的革新确保了知识金字塔结构的稳定性，使得人们将知识成果得以保留记录下来，促进了科技发展的进程。在探索自然科学的进程种，科学家在追求真理的同时往往也面临着一系列社会问题，如宗教伦理、异端观点的接受程度、社会经济成本以及创新等方面的约束。

从这个意义上讲，ICOME 会议的授予奖项与阿威罗伊/伊本鲁世德(Averros)普遍思想密切相关，意在致力于强化一种愿景，即把科学事实置于信念信仰之上，把智慧成果置于使用利益之上,如阿威罗伊所说“常识性的思想应用于实践生活足以，像粮食一样是生存必需品，但是对于智慧和精神方面的探索是永无止境的”。

继 2015 年该会议在临地中海城市得土安落下帷幕之后，2016 年又在大西洋沿岸的拉罗谢尔成功举办。本会议的两个关键议题“材料”与“能源”，与人们的交通和居住活动引起的环境变化有着密切关联。鉴于能源转型和可持续发展的迫切性要求，生态材料的研发和可持续发展的探究仍是当前乃至未来相当一段时间的重要议题。2017 年材料与能源会议意在将欧洲-地中海思想与中国文化相结合，二者均在人类材料制造和能源利用方面做出过举足轻重的贡献。本届会议在著名的海滨城市天津举行，天津也是历史悠久的著名的港口贸易城市和航空航天工业的重要基地，本届会议在该城市举行也象征着继地中海(Tétouan 2015)和大西洋(La Rochelle 2016)会议之后又一重要延续和发展的象征。

本次会议将有助于科研学者和企业专家为未来的材料能源发展指明方向，既涵盖材料和能源问题，还包括对最新科研技术以及工业进步成果的评估。ICOME17 汇聚了超过 250 名国际专家学者，他们来自法国、中国、美国，以及欧洲、亚洲等其他国家的不同科研机构。同时还有部分来自企业的技术管理人员参与本次会议，他们对行业最新技术进展的敏锐性有助于提高企业竞争力。

会议主席和所有组委会成员真心希望所有参会者都能尽情地展示、愉快地交流，预祝所有参会者在天津度过一段充实又有意义的旅程。

The chairs thanks PhD Student MA Xiaoyan (ENS Paris-Saclay) and Pr. WANG Xiong (Univ. de Lorraine), for helping on translation to Chinese.

How to get to the conference venue

1. Arrive at Beijing-Capital International Airport

You can choose the routes as follows

You can take the Beijing Metro Airport Line at Terminal 2 to Xizhimen Station (西直门).

- When you arrive at Xizhimen Station, you can choose the subway line 4 to Beijing South Station (北京南站).
- Then you need intercity train tickets to TianJin Railway Station at Beijing South Railway Station.
- When you arrive at TianJin Railway Station, you can choose the subway line 2 to Jingjianglu Station (靖江路). After you get out of the subway at C, you will see the main meeting place across the street. The Full cost of stroke is less than ¥120.

You also can choose Airport bus from Beijing-Capital International Airportto Tianjin.

- The location of the bus is gate 1 of Capital Airport Terminal 3 and gate 15 of Capital Airport Terminal 2.
- You will spend 2.5 hours to reach the Tianjin Tianhuan Bus station (¥83).
- When you arrive at Tianjin Tianhuan Bus station (天津天环客运站), you can choose Taxi to Hyatt Regency Tianjin East (天津帝旺凯越酒店).

2. Arrive at Tianjin Binhai International Airport

You can choose the routes as follows

You can take the Tianjin Metro Line 2 from Tianjin Binhai International Station to Jingjianglu Station (靖江路).

- And then you can choose to walk or taxi to the main meeting place.
- The full cost of stroke is less than ¥20.

You also can choose to taxi to the main meeting place from Tianjin Binhai International Station to the main meeting place. The full cost of stroke is less than ¥100.

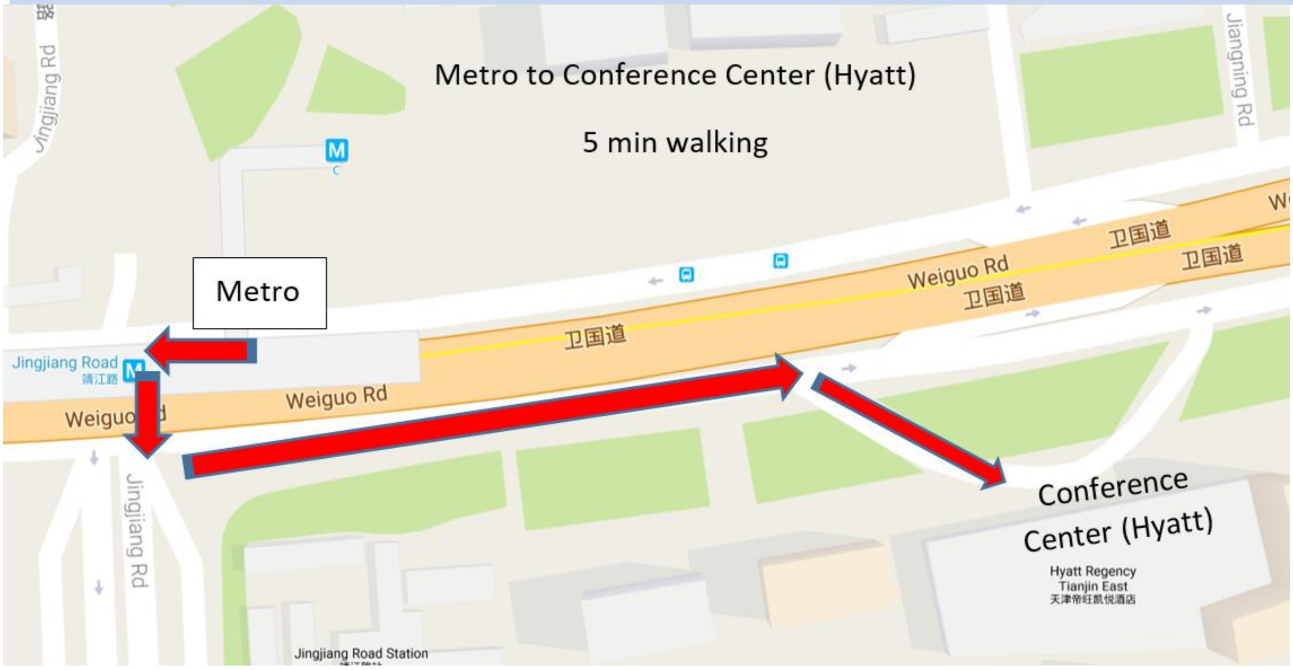
During the trip, our staff will provide help if you have problems.

Dr.Tian Shen	Beijing airport	18801467566	tianshen2012@126.com
Dr. Zhu Tingting	Beijing airport	18810482585	ttzhu24@126.com
Dr. Wang Yulin	Tianjin airport	13622071133	wzwyl2010@126.com
Dr.Dai Baomin	Tianjin airport	13803003983	920162688@tjcu.edu.cn

3. Hotel address and location (Map)

Hotel ***Hyatt Regency Tianjin East,*** No. 126 Weiguo Road, Hedong, 300161 Tianjin

4. Metro to Conference Hotel (walking)



ICOME Conference Chairs

Pr. Dr. Ing. R. 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 Superieure (Cachan) since 2010. He is also adjunced professor at Tianjin Uni. Of comm. (China). 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) and dean of Civil/Environmental department (since Oct. 2012). His present research activity is within the LMT laboratory where he manages 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 150 referenced international journals.

Pr. M. El Ganaoui, 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 Ass. 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 150 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.

Pr. Bin Liu, Liu Bin is professor in the department of Refrigeration Technology since 2011. He got his PhD in 2003. He did also a research stay in the Cergy-Pontiose university/France (2008 - 2010). Now he is the vice director of Tianjin Key Lab of Refrigeration Technology and the member of D2 of International Refrigeration Institute. His specialization is the heat and mass transfer in porous materials applied in the fresh food preservation and surface cooling technology. His expertise is obvious from the number of publications and patents per year.

ICAPM Chairs and Mini Symposium Chairs

1. ICAPM Chairs

Prof. Abdul majeed Mohamad graduated with B.Sc. and M.Sc. from Baghdad University, College of Engineering with honor, Ph.D. from School of Mechanical Engineering, Purdue University, W. Lafayette, Indiana, USA. Post Doc from the same school. In 1980, Dr. Mohamad he was Prof. 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 of graduate studies, acting director for Centre for 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 (Google scholar h-factor is 39, Scopus h-factor 33, his works cited more than 5000 times). His is the author of book (entitled Lattice Boltzmann Method Fundamentals and Engineering Applications with Computer Codes), published by Springer 2011. 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 authored and co-authored more than 250 papers and graduated more than 40 Ph.D. and M.Sc. students. He has been awarded Research Excellence and Graduate Teaching Excellence awards from University of Calgary, Dept. of Mechanical Engineering, Canada.

2. Mini Symposium Chairs

F. Charrier-El Bouhtoury She is currently A./Professor — HDR (Accreditation to supervise research) at Pau and Pays de l'Adour University. She is a team member of the Polymer Physics and Chemistry Team of the "Institut Pluridisciplinaire de Recherche sur l'Environnement (IPREM /EPCP), UMR 5254".Her research interest focuses on the formulation and characterization of resins based on renewable resources.

Her research activities also include the development of biobased composites and materials. The implementation of these applications are involved in much academic and industrial collaborations locally, nationally and internationally.

Prof. Nunzi Jean-Michel His research interests are the optical and electronic properties of organic materials and devices: photo-physics, nonlinear optics, self-organization under light, charge generation and transport, solar cells, plastic lasers, nano-materials.

He also study the creation of chiral structures using light - matter interactions. Research Specialization: Photonics, Nonlinear Optics, Organic Devices, Organic Electronics, Organic Semiconductors, Polymers, Nanomaterials.

Prof. Khellil Sefiane He is a Professor of Thermophysical engineering at the Uni. of Edinburgh. He has been associate editor for the Int. Journal of Multiphase Flows, Elsevier and the ASME Journal of Heat Transfer. He has a long interest in heat and mass transfer and multiphase flow problems with a focus on both novel experimental techniques and numerical modelling. His studies of evaporating droplets have included identification of self-excited hydrothermal waves, influence of substrate conductivity, adsorption dependence. In 2009, he received the Institute of Physics Printing & Graphics Science Group Prize for his "Fundamental studies on droplet evaporation". He holds an ExxonMobil fellowship awarded by the Royal Academy of Engineering (2000), is a Fellow of the Royal Society of Chemistry, a Japan Society for the Promotion of Science Fellow (Kyushu University, Japan, 2011), an elected UK representative on EUROTHERM Com. an elected member of the Scientific Council of the Int. Centre for Heat and Mass Transfer. He has published more than 140 refereed journal papers and more than 10 contributions to books.

Honorary Chairs

Prof. Michele COMBARNOUS (AA2), *Academy of Science, France*

Prof. Wenquan TAO, *Chinese Academy of Science (CAS)*

Scientific and organizing Committee

1. Scientific Committee

Abrudeanu M.,	Acad. Sciences,	Roumania
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2. Organizing Committee

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Dr Yang W.	Tianjin University of Commerce	China
Dr Zhu Z.	Tianjin University of Commerce	China
Dr Zhu T.	Tianjin University of Commerce	China
Ph.D Song M.	Guangdong University of Technology	China

Honorary committee

Prof. Shen Jiang	Tianjin University of Commerce	China

A warm thanks to the reviewers, administration staff and the students for their devotion allowing the organization success of the present event.

Keynotes PRESENTATIONS

TURBULENCE IN POROUS MEDIA (KEY_N 1)

Prof. Marcelo J.S. de Lemos, Computational Transport Phenomena Laboratory, Department Energy, Brazil

ABSTRACT: *"Turbulence in Porous Media"* introduces the reader to the characterization of turbulent flow, heat and mass transfer in permeable media, including analytical data and a review of available experimental data. Such transport processes occurring a relatively high velocity in permeable media are present in a number of engineering and natural flows. This new edition features a completely updated text including two new chapters exploring Turbulent Combustion and Moving Porous Media. De Lemos has expertly brought together a text that compiles, details, compares and evaluates available methodologies for modelling and simulating flow, providing an essential tour for engineering students working within the field as well as those working in chemistry, physics, applied mathematics, and geological and environmental sciences.

BIOGRAPHY: Prof. de Lemos was born in Rio de Janeiro, Brazil, where he obtained his Bachelor and MSc degrees in Mechanical Engineering from the Pontifical Catholic University of Rio de Janeiro (PUC-RJ) in 1977 and 1979, respectively. In early 1983, he obtained his PhD degree from Purdue University, USA. He spent a year as Assistant Professor at PUC-RJ in 1984, followed by two years as Resident Associate at Argonne National Laboratory, Illinois. In 1986, he joined the Aeronautical Institute of Technology - ITA in São José dos Campos, Brazil. He is Full Professor at ITA, founder and head of the Computational Transport Phenomena Laboratory - LCFT and the newly established Competence Center for Energy – CCE. He also serves as Head of the Department of Energy. From 1991 to 1992, he was Visiting Scholar at Ruhr-Universität-Bochum, Germany. In early 1992, he became Member of the American Society of Mechanical Engineers - ASME and in 2009 he was promoted to the "Fellow" graded by ASME. He and has advised 10 PhD and 20 MSc students.

MODELING OF DYNAMIC DEPOSITION AND FILTRATION PROCESSES OF AIRBORNE PARTICLES BY A SINGLE FIBER WITH A COUPLED LATTICE BOLTZMANN AND DISCRETE ELEMENT METHOD (KEY_N 8)

Prof. Li-Zhi ZHANG, South China University of Technology, Guangzhou, China

ABSTRACT: Airborne particulate matter (PM) pollution has caused many deleterious effects on atmospheric environments and people's health. Fiber filtration has been regarded as one of the efficient and economical way for removing particles from gas streams. To reveal the dynamic capture processes of airborne particles by fibrous filters, and their effects on filtration performance, a lattice Boltzmann modeling approach coupled with discrete element method (LB-DEM) is used for simulations of airborne particle deposition on an individual fiber. The mutual influences between the dynamic particle transport/deposition and the fluid flow are considered. The model well predicts the formation of the dendrites and the dynamic progression of the deposit under different capture mechanisms. The adhesion parameter is proved to have a dominant effect on the dynamic deposition processes and filtration performance. Increases in adhesion parameter lead to looser particle dendrites, faster deposition rates and better filtration efficiencies. The smaller particles tend to have larger pressure drops and more compact dendrite structures at the same deposition mass.

BIOGRAPHY: Li-Zhi Zhang is a Professor at South China University of Technology (Guangzhou, China). He has worked with energy recovery and heat and mass transfer topics and advanced humidity control technologies since 1992.

CURRENT DEVELOPMENT AND PERSPECTIVES OF RESORPTION HEAT PUMPS. (KEY_N 3)

Prof. Alberto CORONAS, *Universitat Rovirai Virgili, Dpt of Mech. Eng., CREVER Catalans, Spain*

ABSTRACT: In many industrial plants a large amount of low-grade waste heat is available due to various industrial operations. An interesting solution for many of these plants in which there is a high heat demand but at higher temperatures, is to increase the thermal level of this available waste heat for further use using a heat pump. Currently, industrial heat pumps supply heat at temperatures between 50 and 90 °C. This temperature limit is restricted by the thermodynamic behavior of the working fluids and the limitations of commercially available components, such as the temperature and pressure at the compressor discharge.
A very interesting technological option are resorption heat pumps. These devices use zeotropic working fluid mixtures with large boiling temperature difference (refrigerant/absorbent) and a solution circuit between a desorber and resorber, instead of the conventional evaporator and condenser. As the evaporation in the desorber of the zeotropic mixture is not complete, along with the vapor stream a residual solution stream is generated and returns to the resorber by means of a solution circuit. The main advantage of resorption cycles involves the best performance due to the pressure reduction of the cycle high pressure compared to the case using pure refrigerant, and the improvement of the cycle efficiency due to lower internal and external temperature gradients at the desorber and resorber (Lorentz cycle). Moreover, heat production may be varied by changing the concentration of the circulating solution between the desorber and resorber. Resorption heat pumps can be classified as compression or absorption depending if the vapour stream produced in the desorber is compressed by a mechanical compressor or by a solution circuit similar to absorption systems. Is especially interesting the case where the resorption heat pump incorporates a compressor able to perform a "wet" compression of the two-phase stream leaving the desorber; because in this way the resulting heat pump has the same number and type of components as a conventional compression heat pump, that is, two heat exchangers (desorber and resorber), a "wet" compressor and an expansion device.
In this paper it is reviewed the current and advanced technologies of absorption and compression resorption heat pumps regarding the working fluid mixtures, performance and applications. The most studied working pair is ammonia/water although other fluids such as carbon dioxide and suitable solvents (organic fluids, ionic liquids, etc) or even ternary mixtures that can exhibit a better technical performance. The use of natural working fluids, the capacity to recover low temperature waste heat, the possibility to produce not only heating or cooling in a reversible way but even both simultaneously avoiding the use of cooling towers or other heat rejection systems, the possibility to develop resorption cycles using chemisorption processes with internal energy storage or cogeneration of power and cooling show promising technical features than could contribute to the future development of resorption heat pumps.

BIOGRAPHY: Prof. Dr. Alberto Coronas is a Professor of Mechanical Engineering at the University Rovirai Virgili and founder and director of the Research Group of Applied Thermal Engineering-CREVER. Professor Alberto Coronas has carried out a number of various developments and projects in the following areas of expertise:

- Absorption heat pumping and refrigeration technology. Development and integration into energy supply systems.
- Modelling, mathematical programming optimisation and energy management software tools development.
- Absorption solar air conditioning. Solar cooling plant monitoring and analysis using different software tools. Development of components for simulation purposes.
- New distributed energy generation technologies. Field test of small scale trigeneration systems, analysis and integration with the building demand site.

He has published over 100 refereed papers, and delivered over 200 communications at national and internationals lectures and conferences. In the last ten years, he has participated in more than 40 national and international R+D projects as main researcher and in some of them as coordinator, and in many research contracts with several corporations and institutions. He has supervised around 30 Ph. D theses and many master theses. He is the coordinator of a doctoral programme on Engineering Thermodynamics of Fluids and a Master degree on Air Conditioning Technologies and Energy Efficiency in Buildings at URV.
He served in many scientific committees of International Conferences like International Sorption Heat Pump Conference (2008, 2011, 2014), Solar Air Conditioning Conference (2007, 2009, 2011, 2013, 2015...), International Polygeneration Conference (2007, 2011, 2015), IMPRES 2013, etc.
He is visiting professor of Anna University, Chennai India (2014-17) and Universidade Federal de Pernambuco, Recife, Brasil (2014-17).

TRANSITION TO RENEWABLE ENERGIES: A REALITY CHECK (KEY_N 20)

Prof. Marcel LACROIX Universite de Sherbrooke, Canada

ABSTRACT: The transition to renewable energies (REs) appears to be the way towards a more sustainable world. But REs are not necessarily sustainable. History and fundamental principles reveal that the energy transition is far more challenging than expected. The challenges are examined and the physical constraints are discussed. It is shown that if REs meet our wants, they cannot meet our needs. It is to the world to adapt to REs. Not the other way around. Are we ready for it?

BIOGRAPHY: Marcel Lacroix is a physicist and a professional engineer who holds a doctorate in nuclear engineering. His professional career spans more than 35 years in the private and public sectors in Canada and abroad. He has been a chief technical manager at Atomic Energy of Canada and Professor at many universities among which the "Université Claude Bernard" and the "Ecole des Mines" in France. He is currently a full Professor at the "Université de Sherbrooke" and a private consultant for the power and process industry. He is the author of numerous technical publications among which textbooks on thermodynamics and popular books on energy and society.

HEAT AND MASS TRANSFER COMPLEX SYSTEM (KEY_N 21)

Prof. Jose' L. Lage P.E., SMU Lylle, Dallas, USA

BIOGRAPHY Professor of Mechanical Engineering, Faculty Senate Past-President, ASME Fellow, ICHMT Scientific Council Member, Department of Mechanical Engineering, Bobby B. Lyle School of Engineering, Southern Methodist University

TIME-SPACE-FRACTIONAL MODELS OF ANOMALOUS DIFFUSION: PHYSICAL BASIS, APPROXIMATE SOLUTIONS AND ANALYSIS FOR APPLICATION IN MATERIAL SCIENCE (KEY_N 9)

Prof. Jordan Yankov HRISTOV *Department of Chemical Eng., University of Chemical Tech. and Met. Bulgaria*

ABSTRACT: The lecture presents the physical basis and the mathematical approach to model anomalous diffusion emerging in new materials and special processes by space and time- fractional diffusion equations. The main approaches for solution of the existing models from pure mathematical basis parallel to the approximate integral-balance method involving space-fractional derivatives of Riemann-Liouville and Caputo are presented.

BIOGRAPHY: Professor Jordan Yankov Hristov was graduated from Electrical Engineering, Technical University-Sofia in 1979. He is working at the Dept. of Chemical Engineering, University of Chemical Technology and Metallurgy from Sofia. Starting from a position of a technician, even though he was a graduated engineer, he was promoted in the next 3 years to a research fellow. He has obtained his Ph.D degree in 1994 in Chemical Engineering. He was promoted in 1998 to the associate professor position and in January 2014 as a professor of Chemical Engineering. The main research area developed was the fluidization, especially, external field effects (magnetic or electric) for controlling the bed hydrodynamics and consequently the performed heat and mass transfer operations. He published more than 160 papers and he obtained more than 1200 citations. Since 2009, he is the Editor-in Chief of the International Review of Chemical Engineering-Rapid Communications and since 2012 he become the Editor in Chief of the International Journal on Advanced Materials and Technologies.

MODELING OF FIXED BED AND ROTARY REGENERATORS (KEY_N 10)

Prof. Jan Taler *Cracow University of Technology, Poland*

ABSTARCT: Fixed Bed and Rotary regenerators are widely used in energy engineering, air conditioning among others. This keynote lecture discusses the mathematical models of heat transfer in fixed bed regenerators. The developed mathematical models are applied to determine the outlet temperature of the working fluid (air, flue gas) for the abovementioned regenerators. The presented approach is verified by comparing the model's results with the experimental results. Also, the approach for the modelling of fixed bed and rotary regenerators is presented on the example of new supercritical power boiler, planned to be installed in Poland

BIOGRAPHY: One Professor at the Cracow University of Technology. His main fields of activity are mechanical engineering and thermal power engineering. At present, he is the chair of the Power Plant Technology. He has been holding this position for the last 15 years.

IMPLEMENTING THE PARIS AGREEMENT BEYOND MARRAKECH COP22: GREENING THE WORLD' S LARGEST FERTILIZER INDUSTRIES (KEY_N 15)

D. Khalid BENHAMOU *Managing Director, Sahara Wind, Rabat, Maroc*

ABSTRACT: At 0.028 €/kWh with up to 70% of total investments spent in local contents Morocco's 850 MW integrated wind energy program set a world record. With a local rotor blade factory serving regional markets on the Tanger-Med hub as part of industrial offsetting policies, the country leveraged its wind energy experience quite well. Public and private wind developments backed by local banks through Morocco's Renewable Energy Law 13-09 will open significant opportunities for extractive industries to match their power needs. Home to 75% of the World's Phosphates reserves, which have been deposited from the exceptional Atlantic Trade Winds through the ages, Morocco's phosphate fertilizer industry is second only to China's. With the saturation of its North-Eastern provinces, China's future wind developments are likely to expand geographically into the South where the world's largest fertilizer industry is located. A unique opportunity opens-up for the world's fertilizer giants to integrate cheap wind-electricity into their energy-intensive fossil fuel-based processes. This will pave the way into a new sustainability era encompassing eco-responsible fertilizers, wind energy storage and renewable hydrogen likely to consolidate today's green electro-mobility revolution. With an interconnected grid to significant power markets, China's global industrial leadership coupled to Morocco's chairmanship of the Marrakech COP 22 conference will make inclusive industrial renewable energy policies a matter of utmost importance.

BIOGRAPHY: Khalid Benhamou (B.S. Engineering 1992, Cal Poly, USA) started his career in agricultural operations which rapidly led to wind power developments. While in charge of Research & Innovation at the "Direction des Domaines Agricoles" - the agricultural assets of the king of Morocco- from 1992-2001, he installed Morocco's first hybrid wind/diesel system in the Sahara desert in 1994. His involvement in wind energy has since never faltered. As developer and founder of Sahara Wind Inc. in 2002, he supported early-on the vision of large integrated wind energy developments to build the Sahara Wind project. This large wind energy and HVDC transmission project was submitted to multilateral institution in 2005, for which regional capacity building funding has been provided. The project's phased implementation with a threshold capacity of 400-500 MW is aimed at supplying over 5 GW of green electricity to North Africa while enabling excess power to be exchanged with Euro-Mediterranean and Sub-Saharan electricity markets. Several european industrial and political initiatives eager to capitalize on parts of this concept have emerged to try to complement these perspectives. Focused on a market based, locally integrated economic development model derived from accessing the significant atlantic trade wind resource, K. Benhamou coordinates regional capacity building in Morocco and Mauritania. This activity co-funded by the North Atlantic Treaty Organization under its Science for Peace & Security program is conducted in academic partnerships with local industries where the issue of wind energy integration in weaker grids remains critical.

A COMBINED SYSTEM OF SOLAR ENERGY AND RADIATION COOLING (KEY_N 19)

Prof. Gang Pei *University of Science and Technology of China, China*

BIOGRAPHY: Prof. Gang Pei is a Professor of University of Science and Technology of China and the dean of Department of Thermal Science and Energy Engineering. He received his doctorate in engineering thermal physics in 2006 from the University of Science and Technology of China. He has been engaged in the fields of solar energy utilization for a long time. His main achievements are as follows:

1. A study on a novel solar photovoltaic/thermal (PV/T) system. The PV/T system, which exploits photovoltaic/thermal conversion, has significantly increased the photovoltaic/thermal efficiency and utilize the solar energy in whole wavebands.

2. A study on the photovoltaic-solar heat pump system. The heat pump performance and solar energy utilization efficiency were significantly improved through dynamic integration of the multifunction heat pump cycle with photovoltaic/thermal conversion.
3. By combining the physical properties of scattered and low density solar energy with excellent low-temperature thermal properties of the organic Rankine cycle, the distributed solar energy combined a cooling-heating-power system based on the organic Rankine cycle was proposed. Several critical problems involving the thermodynamic cycle were further studied.
4. A combined solar heating and radiative cooling system. The system can gain heat energy during the day via photo thermal conversion and cooling energy at night by radiating heat into outer space through the atmospheric window.

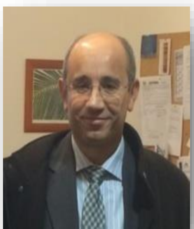
He has published more than 140 papers in journal and conference proceedings, and obtained 23 national patents in the research fields. He has also been awarded a Marie Curie Visiting Scholarship Award from the EU, the Lu Jiaxi Young Talents Award from CAS, the New Century Excellent Talents Award from the Ministry of Education, and the Excellent Youth Fund Award from Anhui Province, as well as runners-up for the CAS Outstanding Teaching Achievements Award

MATERIALS AND ENERGY FROM LIGNIN (KEY_N 16)

Prof. Jalel LABIDI *Chemical and Environmental Engineering Dpt, University of the Basque Country, Spain*

ABSTRACT: In recent years, the interest in using biomass as a feedstock as alternative to fossil fuels has been increased. Among the constituent of lignocellulosic biomass lignin is the less exploited polymer. Lignin is the second most abundant biopolymer after cellulose, its main functions in plants are to provide rigidity and physical strength to plants, internal transport of water and nutrients and protect plants from microorganisms and insects. Lignin is a by-product of paper and pulp industry and ethanol refineries it is generated in large quantities annually, also can be obtained from other sources like agricultural wastes, forest residues and industrial subproducts by different extraction methods. Lignin has a complex heterogeneous structure that consists of phenylpropane units that comes from three aromatic alcohols p-coumaryl, coniferyl and sinapyl alcohols. The chemical structure of lignin has notable distinction depending on the origin, growing conditions of the plant and used extraction process. Although the heterogeneity of its structure creates some limitations, their composition and abundance makes it an attractive alternative to replace no-renewable sources and it could be recognized as an important feedstock in biorefinery processes for the production of energy, fuels, chemicals and materials. Lignin is an excellent energy source due to their high heating value (26-28 MJ/ton dry lignin). It is suitable to produce electricity, power, fuel, steam, or syngas. Lignin has an enormous potential for use as a raw material in the polymer industry. The lignin addition has an important influence in thermal and mechanical behavior of some polymers. Chemical modification is an alternative to improve the reactivity of the lignin trough the creation of new actives sites or functionalization of hydroxyl groups giving to lignin new functionalities for different applications in the field of materials and energy.

BIOGRAPHY: Jalel Labidi has a Chemical Engineering degree and a PhD in Chemical Engineering from the Polytechnic Institute of Lorraine (France). He has developed his research career in several centers: Ecole Polytechnique of Montreal (Canada), Canmet ENERGY (Canada), CNRS (France), University of Girona and finally at the University of the Basque Country. Currently it is permanent researcher in the Department of Chemical and Environmental Engineering of the University of the Basque Country. He is the responsible for the research group "Biorefinery Process" (BioRP) recognized by the UPV/EHU and the Basque Government.



LIQUID METALS IN ADVANCED THERMAL MANAGEMENT AND ENERGY HARVESTING (KEY_N 2)

Prof. Jing LIU Dpt of Biomedical Eng., Tsinghua Uni, & Tech Inst of Ph.&Ch., Chinese Academy Scie, Beijing, China

ABSTRACT: Liquid metals such as eutectic gallium-indium, gallium-indium- tin or allied alloy are quickly emerging as revolutionary functional materials in a wide range of important areas owning to their multi-capabilities like excellent thermal, electrical conductivity, being highly fluidic around room temperature etc. With many unique merits hardly offered by conventional fluids, liquid metals have recently attracted tremendous attentions from both academia and industry. Particularly, the room temperature liquid metal cooling is being developed as a powerful way to tackle the thermal barrier challenges in advanced high heat flux devices, spanning from electronics, optoelectronics, battery, to power system etc. Over the past few years, we have carried out comprehensive works to investigate the fundamental and practical issues of liquid metal in thermal management and energy harvesting areas and established a series of new technologies. Some of these strategies were demonstrated to be rather useful even translated into industrial products with exceptional performances. This talk is dedicated to present an overview on the basic features of liquid metals, material development, flow driving, device designing philosophy, thermal management control as well as typical applications thus enabled. Along with that, the fundamental phenomena including mechanisms lying behind will be illustrated. Challenging issues in pushing the new technology into large scale utilization will be raised. It is expected that liquid metals will find unique and important values in a wide variety of thermal management, power system and energy areas where reliability, compactness, low noise and energy saving are urgently requested.

BIOGRAPHY: Jing Liu received his double bachelor's degrees (B.E. in Power Engineering and Control and B.S. in Physics) in 1992, and Ph.D. in Thermal Science with specialty on Bioengineering in 1996, all from Tsinghua University. He then served as assistant professor there, a postdoctoral research associate at Purdue University, and a senior visiting scholar at MIT. He has been a professor of Technical Institute of Physics and Chemistry, Chinese Academy of Sciences (CAS) since July 1999 and a professor of Tsinghua University since August 2008. Dr. Liu works intensively at the interdisciplinary areas among thermal science, liquid metal and biomedical engineering. He has made significant contributions to the bioheat transfer area through numerous conceptual innovation, methodology development and technical inventions. Quite a few of his inventions have been translated into clinical uses. Dr. Liu pioneered a group of nonconventional technologies and fundamental scientific discoveries through introducing the room temperature liquid metals into rather diverse areas which successfully initiated many new frontiers in chip cooling, printed electronics and 3D printing, biomedical technology, soft machine and energy area etc. As an educator, Dr. Liu tried his best to contribute to the teaching, research, design and development of several newly emerging frontiers in thermal science, energy and bioengineering through nine popular book publications. Many of them have been widely adopted as textbooks throughout China or introduced overseas. Particularly, his book "Micro/Nano Scale Heat Transfer", first appeared in 2001, has been reprinted five times over the years. Apart from that, Dr. Liu has published seventeen invited book chapters, over three hundred and eighty peer reviewed journal papers (18 out of them were selected as cover or back cover articles). His researches were frequently featured by world renowned media like: New Scientist, MIT Technology Review, Nature, Nature Materials, IEEE Spectrum, Physics Today, Newsweek, Daily Mail, Discovery, Chemistry World, National Geographic Daily News, and Fox News etc. Dr. Liu is a winner of The William Begell Medal. He is also a recipient of 2010- 2011 Best Paper of the Year Award from ASME Journal of Electronic Packaging, the 2003 National Science Fund for Distinguished Young Scholars of China, National Science and Technology Award for Chinese Young Scientist etc. He has graduated more than 50 PhD. or Master degree students and received five times highest teaching award from the CAS.

PASSIVE COOLING OF BUILDING INTEGRATED PHOTOVOLTAIC SYSTEMS BY MEANS OF TURBULENT NATURAL CONVECTION (KEY_N 6)

Prof. Victoria Timchenko *School of Mech & Manuf Engi UNSW (Uni Of New South Wales) Sydney, Australia*

ABSTRACT: In recent years, building integrated photovoltaic (BIPV) systems have been one of the fastest growing sectors in the renewable energy industry. The BIPV systems which are considered in the present investigation are facade (vertical) and roof (tilted) photovoltaic (PV) double-skin configurations. These systems consist of an air gap which separates the facade and roof of a building from a secondary PV facade, thereby forming an open-ended channel between them. The double-skin configurations can provide passive cooling of BIPV systems by means of natural convection of air which is entrained in the open-ended channel formed by a gap between the walls. In this work numerical investigations of the flow and heat transfer in open-ended channel formed by the double skin facade have been undertaken in order to improve understanding of the phenomena and provide best configurations for passive cooling. Both uniform heating and non-uniform heating configurations in which heat sources alternated with unheated zones on both skins were studied. In computational study three dimensional transient LES simulation was carried out. Computational results were compared with experimental data obtained in CETHIL, Lyon and UNSW, Sydney. It was shown that in comparison to uniformly heating configuration, non-uniformly heating configuration enhances both convective heat transfer and chimney effect.

BIOGRAPHY: Dr Timchenko is a senior lecturer in the School of Mechanical and Manufacturing Engineering at The University of New South Wales. She completed her Honours Degree in Physics at Kharkov State University, Ukraine, and her PhD in Engineering (1993) at the Institute for Problems in Machinery, The Ukrainian Academy of Sciences. Her areas of expertise are computational fluid dynamics and heat transfer. Research interests include natural convection and phase change problems; cooling of building integrated photovoltaic systems and microelectronic devices; synthetic jets; modeling of nano-particles in human arteries and laser hyperthermia for biomedical applications.

ROLE OF POROUS MEDIA THEORY IN BIOMEDICAL ENGINEERING (KEY_N 11)

Prof. Shanmugam DHINAKARAN *Indian Institute of Technology, Indore, India*

ABSTRACT: This lecture shall also throw light on numerical computations carried out for ascertaining 23 level of bifurcations in human lung, the models used for it and its development and the use of PMT for the design and R&D of prosthetic devices like artificial lungs. A special emphasis will be laid on the models dealing with respiratory drug delivery and the effects of particle deposition due to air pollution in human lungs. It is well understood that human eye is a very critical organ and any minor temperature rise in it compared to other parts of the body can hamper vision. Hence, lately several numerical attempts were made to simulate the thermal disturbances in human eye. These studies will be detailed while discussing modeling of eye as a fluid filled porous sphere. The effects of electromagnetic radiations on the eye (caused during situations like Sauna) and brain (due to excess mobile phone usage) will also be pinpointed.

BIOGRAPHY: Dr. Dhinakaran is an assistant professor in the department since March 2012 in the Discipline of Mechanical Engineering of Indian Institute of Technology Indore, India
His specialization is Computational Fluid Dynamics. He has a wide range of experience in working at different European Universities as a PostDoc.

CONVECTION HEAT TRANSFER AND TWO-PHASE FLOW IN MICRO/NANO POROUS STRUCTURES (KEY_N 14)

Prof. Peixue JIANG Key Lab for Thermal Science and Power Engineering of Ministry of Education, Key Lab for CO2 Utilization and Reduction Technology Department of Thermal Engineering, Tsinghua University, Beijing, China

ABSTRACT: Heat transfer and two phase flow in porous media has received much attention for many years due to its importance in engineering, such as advanced nuclear reactors, aerospace, solar-thermal power stations, EOR, CO_2 aquifer sequestration and enhanced geothermal system (EGS). The knowledge on heat transfer and two phase flow in porous media is essential for the development of the technologies. This keynote speech will introduce convection heat transfer and two phase flow in micro and nano scale porous structures of the common fluids and the fluids at super-critical pressures. The internal heat transfer coefficient in porous media is a key parameter for the LTNE model which has received much attention. The internal heat transfer coefficient model needs to be improved for some specific cases, e.g., for a flow in microporous media, the slip-velocity and temperature jump have a large impact on the interphase heat transfer. The effect of slip-velocity and temperature jump on the interphase heat transfer is investigated experimentally and numerically, new models of internal heat transfer coefficient and friction factor in microporous media were developed. Experimental study was carried on to evaluate the internal convection heat transfer of CO_2 at supercritical pressures in sintered porous media. The experimental test section was designed with confining pressure to prevent the fluid from flowing through the gap between the sample and holder wall. The effect of thermophysical properties and buoyancy force on the internal heat transfer coefficient were analyzed. Nusselt number correlations were developed. Pore- and Core-scale experimental set-ups to investigate the high pressure CO_2/Water two phase flow and phase change process, and mass transfer in Nano Pores for CO_2 enhanced shale gas recovery were studied experimentally. It was found that CO_2 exsolution occurs in presence of strong supersaturation in the aqueous phase, depressurization rate significantly impacts the exsolution behavior, the iInitial saturation and pore-scale morphology of the CO_2 rich phase influence the depressurization process. Exsolved CO_2 is difficult to be mobilized due to the disconnected CO_2 phase morphology.

BIOGRAPHY: He is a professor in the Department of Thermal Engineering, Tsinghua University, China. He received his bachelor's degree at Tsinghua University in 1986 and his Ph.D. in the Department of Thermal Engineering in engineering of Moscow Power Engineering Institute in 1991. He then joined the faculty of Tsinghua University and took the full professor post in 1997. His main research interests are fundamental research on convection heat transfer in porous media and enhanced heat transfer, convection heat transfer of fluids at Super-Critical Pressures, transpiration cooling and film cooling, thermal transport in micro/nano-scale structures and spray cooling, migration and heat mass transfer of super-critical CO_2 in porous media under conditions of geological storage and oil/shale gas recovery, Enhanced Geothermal System (EGS). Up to now, his research has resulted in more than 130 scientific publications in refereed international journals, 120 international conference papers, 150 papers published in refereed Chinese journals and 2 book chapters in Chinese. He has won the National Natural Science Award second prize, and he is the recipient of the National Science Fund for Distinguished Young Scholars from the National Natural Science Foundation of China, the 8th Beijing Youth Science & Technology Award, Chang Jiang scholar of Ministry of Education, candidate of the New-Century National Talented Persons Plan, the leader of the Science Fund for Creative Research Groups from the National Natural Science Foundation of China. Professor Jiang is now the head of department of Thermal Engineering at Tsinghua University, Director of Institute of Engineering Thermophysics in department of Thermal Engineering, Director of Key Laboratory for Thermal Science and Power Engineering of Ministry of Education, director of Beijing Key Laboratory of CO_2 Utilization and Reduction Technology. He is a council member of the Chinese Society of Engineering Thermophysics, Vice Chairman of the Chinese Heat and Mass Transfer Society, member of department of Energy and Transportation in Science and Technology Committee of the Ministry of Education, an advisory editorial board member of Experimental Heat Transfer, and Heat Transfer–Asia Research, an editor of Petroleum, and MPEI Bulletin, an deputy editors in chief of the Chinese Journal of Propulsion Technology, an editor of the Chinese Journal of Engineering, Thermophysics, and a vice chairman of the Committee of Editors of the Petro-Chemical Equipment.

DEVELOPMENT OF BIPOROUS MEDIA AND ITS APPLICATION IN LOOP HEAT PIPE (KEY_N 18)

Prof. Liu WEI *School of Energy and Power Engineering at HUST, China*

ABSTRACT: Heat transfer and flow in porous media widely appears in the areas of natural phenomenon, biological phenomenon and engineering field. As a typical industrial application of porous media, capillary loops (including capillary pumped loop and loop heat pipe) are a high efficient and passive heat transfer device, which transfers heat by two-phase cycle of the working fluid. It is very suitable for widely using in the fields of satellite and spacecraft thermal control and electronics cooling with high heat flux.

In the past few years, our research group have devoted much work to the performance study of capillary pumped loop (CPL) and loop heat pipe (LHP). We develop the first CPL prototype with porous media in both the evaporator and the condenser. The CPL prototype is validated to notably improve the startup characteristics and the stability of loop. In order to further increase the performance of flow and heat transfer in the porous media in the evaporator, we independently develop the sintering process of biporous wick. The large pore and the small pore distributed in the biporous wick can both keep a large capillary force and decrease the flow resistance of working fluid. Meanwhile, the biporous wick possesses high porosity and high permeability. When the biporous wick is used in the LHP system, the loop shows an excellent performance. For the stainless-steel-ammonia LHP with flat evaporator, the loop shows very fast and smooth response to heat load and operates stably without obvious temperature oscillation in the whole tested heat load range. The maximum heat load that the loop can transport reaches 130W (heat flux corresponding to 12.8W/cm^2) with the heater wall temperature is lower than 60ºC.In order to utilize heat leak from side wall conduction and improve the startupperformance of LHP, a novel LHP with two primary wicks is presented. Experimental results show that the novel LHP with two primary wicks can start upsuccessfully at low heat load of 10W.In order to solve the drawbacks of startup failure, limited heat transport distance andoperational temperature oscillation due to the miniaturization of flat loop heat pipes, we propose a novel two-phase loop called pump-assisted capillary phase change loop. The loop is validated to possess the advantages of strong heat transfercapability, low startup heat load, stable operation and high reliability. For the loop using ammonia as working fluid, the maximum heat load the loop can transfer is 250W and thecorresponding heat flux is 24.6W/cm^2, when the heater wall temperature is limited in 60°C.The research objective in capillary loops is expected to provide a highly efficient and reliable solution for cooling high heat flux electronic devices.

BIOGRAPHY: Professor of School of Energy and Power Engineering at HUST. Professor Liu is committed to the fundamental research and engineering application in the field of engineering thermophysics. His research interests mainly includeheat and mass transfer in porous media, electronics cooling, heat transfer enhancement and residual heat utilization. In recent years, professor Liu has undertook more than 20 national projects, including NSFC, 973 Project, National Defense Preliminary Research Projects and so on. Besides of an author or a co-author of 5 books, he has published more than 170 papers in various prestigious journals. Furthermore, Professor Liu is a council member of Chinese Society of Engineering Thermophysics.

MECHANICAL COMPRESSION ANALYSIS OF BIOSOURCED POLYMERS ON 3D PRINTING (KEY_N 13)

Prof. David BASSIR *Inst. of Industry Technology, Guangzhou & Chinese Academy of Sciences (IIT, GZ&CAS), China*

Abstract: The main characteristic of Additive manufacturing (AM) is the ability to manufacture digitalised models with a minimum dependence to tooling. This allows shortening the fabrication cycle to one main step separating the virtual design from the manufactured part, namely machine instructions. AM brings other benefits through the creativity that is allowed by the possibilities to print objects of complex 3D geometries. Designs represent the final rendering as no retouching is needed to comply with tooling constrains. The former advantages are balanced by some limits such as geometry inaccuracy. Geometry inaccuracy comes from the

conversion of smooth continuous shapes into a discrete set of layers or filament trajectories. If the limits in printable size, rate are not mentioned, one major drawback is the anisotropy brought by the directed printing in one main direction, namely build direction. The cohesive nature of the deposited material affects the mechanical performance of the design. Thus, the ambition of this work to evaluate the effect of such anisotropy on airy biosourced designs manufactured using Fused Deposition Modelling (FDM).
Spherical voids of diameter 8 mm are generated in a cubic domain of size 30 mm using a sequential addition algorithm. FE computation is performed to select the optimal airy structures maximising the stiffness. Airy geometries are converted into meshes using tetrahedral elements assuming elastic and isotropic behaviour. The material model is scaled using engineering constants for the Polylactic acid (PLA) a biosourced polymer made from renewable resources such as starch, or sugarcane. The predicted Young's modulus is maximised by searching, among the generated structures, the one that has the maximum stiffness.
This study shows the possibilities of using reverse engineering procedures (technique implemented using a home code interfaced with Comsol finite element software) to design airy bio sourced materials using Fused Deposition Modelling. The compression behaviour beyond the elasticity stage is affected by the damage caused by inter-filament decohesion. Anisotropic behaviour is thus declared depending on the loading orientation with respect to the building direction.

BIOGRAPHY: David H. BASSIR is as A/Professor at the French University of Technology UTBM and also a foreign expert for advances material and structures at GZIIT-Chinese academy of sciences (China). Previously, he was the dean of IUT at the University of Lorraine (France), Consult for Science and Technology at the French Embassy to serve at the Consulate General of France in Guangzhou (China), General Director of Research at the "EcoleSpeciale des Travaux Publics, du Batiment et de l'Industrie (Paris)" and Space Craft engineer at GECI Technology in different space agencies such as Arianespace (France) and Matra Marconi Space (Astrium Group). He joined the Mechanical Department of the UTBM as Associate professor in 2001 and the Chair "Aerospace Structures" in 2008 at Technical University of Delft as visiting professor. He holds a Master and a PhD degree in structural optimization from the University of Franche-Comte (France), with the most honorable mention. He has published more than 150 (30 indexed) papers in journals, books and conference proceedings.

ADVANCED PORE-SCALE MODEL FOR MULTIPLE PHYSICOCHEMICAL PROCESSES IN POROUS MEDIA (KEY_N 12)

Prof. Li Chen Xi'an Jiaotong University, Xi'an, China

ABSTRACT: Multiple physicochemical reactive transport processes in porous media are pervasive in energy and environmental science. Typical examples include fuel cells and batteries, geological storage of carbon dioxide and nuclear waste, exploitation of conventional/unconventional hydrocarbon resources and VOC emissions. In such processes, strongly coupled single or multiphase flow, heat transfer, mass transport and chemical reactions simultaneously take place in complex structures of porous media. A better understanding of these processes is critical to improving efficiency and durability of the electrochemical energy conversion systems, to enhancing the hydrocarbon recovery, to managing safe disposal of energy-related waste, and to controlling the air quality. Such processes, however, is a challenging problem for theoretical analysis, experimental studies and numerical simulations as not only multiple processes are involved but also these processes are strongly coupled. Besides, the complicated morphology of porous media leads to complicated interfacial interactions between reactive transport processes and the porous structures. In this paper, we will introduce our work of developing advanced pore-scale numerical methods which take into account the coupled multiple physicochemical processes and their interactions. Such pore-scale numerical methods have been adopted to investigate at pore-scale several typical physicochemical processes in energy and environmental science, including multiphase flow and electrochemical processes in gas diffusion layer and catalyst layer in proton exchange membrane fuel cell, multicomponent reactive transport with solid dissolution-precipitation during CO_2 sequestration, brine thermal migration in crystals during nuclear waste disposal, and VOC emission. Complicated pore-scale phenomena are captured and the coupled mechanisms are revealed by the pore-scale studies.

BIOGRAPHY: Prof. L. Chen fro, Xi'an Jiaotong University, Los Alamos National Lab, expertise on Transport in porous media, fuel cell & flow battery, shale gas, CO_2 sequestration, pore-scale and multiscale simulation.

THE LIFETIMES OF EVAPORATING DROPLETS MATERIALS AND ENERGY FROM LIGNIN (KEY_N 5)

Prof. Stephen K. Wilson *Dpt of Mathematics and Statistics, Univ of Strathclyde, Livingstone Tower, United Kingdom*

ABSTRACT: Droplet evaporation plays a crucial role in many practical applications, including ink-jet printing and spray cooling. As a result, the evaporation of a fluid droplet on a solid substrate has been the subject of extensive theoretical and experimental investigations by a wide range of research groups from many different countries in recent years. One aspect of droplet evaporation that has, until recently, received relatively little attention is that of the lifetime of a droplet (i.e. the time it takes for a droplet to evaporate entirely). In the present lecture, after reviewing some related work on droplet spreading in the presence of thermocapillary effects and the effect of an external airflow on a ridge of fluid, I will describe how the lifetime of evaporating sessile droplet depends on the manner in which it evaporates. In particular, I will discuss the lifetimes of droplets evaporating in the constant contact radius, constant contact angle, stick-slip and stick-jump modes, highlighting a number of interesting and unexpected results.
This lecture reports on various aspects of joint work with Dr Brian Duffy and Dr David Pritchard (University of Strathclyde), Professor Khellil Sefiane (University of Edinburgh), current PhD student Feargus Schofield, and former PhD students Drs David Holland, Gavin Dunn, Colin Paterson and Jutta Stauber. Some of this work was undertaken while the author was a Leverhulme Trust Research Fellow (2013-16) supported by award RF-2013-355 "Small Particles, Big Problems: Understanding the Complex Behaviour of Nanofluids".

BIOGRAPHY: Professor Stephen Wilson holds the 1984 Chair in Mathematics and is the leader of the Continuum Mechanics and Industrial Mathematics (CMIM) research group at the University of Strathclyde in Glasgow, United Kingdom, and has research interests in the application of mathematics to a wide range of real-world problems in fluid mechanics, including thin-film flows, rivulets and dry-patches, evaporating droplets, dielectrophoresis, microfluidics, liquid crystals, non-Newtonian fluids (including viscoplastic fluids, thixotropic fluids and nanofluids), anti-surfactants and self-rewetting fluids, fluid- structure interaction problems, biological flows (such as that in the human knee), nucleate boiling, confined bubbles, thermocapillary (Marangoni) and thermoviscosity effects, spin coating, magnetohydrodynamics, and fluid impact problems. In particular, he has a longstanding collaboration with Dr Brian Duffy (also at the University of Strathclyde) and Professor Khellil Sefiane (at the University of Edinburgh) on various aspects of droplets. Joint work with former Ph D students Gavin Dunn (Strathclyde) and Samuel David (Edinburgh) led to the award of the Institute of Physics (IoP) Printing and Graphics Science Group Prize in 2009 for their "fundamental study of droplet evaporation". Recent work with former Ph D student Jutta Stauber has focused in the lifetimes of evaporating droplets. Professor Wilson is the Joint Editor-in-Chief (with Professor Omar Matar, Imperial College London, United Kingdom) of the Journal of Engineering Mathematics, is a Fellow (and Council Member) of the Institute for Mathematics and its Applications (IMA), and has recently completed a highly successful Leverhulme Trust Research Fellowship (RF-2013- 355).

ADVANCES IN THERMODYNAMIC POWER CYCLES FOR UTILISING LOW-GRADE HEAT SOURCES (KEY_N 17)

D. Zhibin Yu *School of Engineering, University of Glasgow, United Kingdom*

ABSTRACT: It is estimated that about 20 to 50% of industrial energy input in the world is discharged as waste heat in the form of hot exhaust gases, cooling water, and heat lost from hot equipment surfaces and products.

The energy intensive industrial sectors include iron and steel, aluminium, cement, ceramics, glass, oil refinery, food industry, and so on. Most of these waste heat sources are in the category low-grade heat with a temperature less than 250°C. In addition, renewable energy, such as solar thermal and geothermal energy, is another major source of a low-grade heat. For instance, the sustainable technical potential for Europe is estimated as 350TWh/yr. It is also estimated that 70% of the global geothermal resource is at temperatures of 100-130°C. Therefore, utilising these low-enthalpy heat sources becomes attractive and can potentially make a significant contribution to carbon reduction and energy security of the world.

In this talk, several thermodynamic power cycles that are suitable for power generation from low-grade heat sources will be discussed, including organic Rankine cycle, Kalina cycle, thermoacoustic power cycle, trilateral flash cycle, etc. The talk will analyse their pros and cons, potential and limitations, as well as the state-of-the-art and future trend of R&D. Furthermore, the recent advances of these power cycles, such as dynamic organic Rankine cycle and composition tuning Kalina cycle, will be introduced and discussed.

BIOGRAPHY: Dr Zhibin Yu is one lecture in Energy Engineering of School of Engineering, University of Glasgow, UK. He got his PhD in Thermal Engineering in Technical Institute of Physics and Chemistry in China. His works focus on the energy efficiency improvement of the heat transfer units. As PI, He won several important projects. For his outstanding works, he also won Best Paper Award in several conferences.

NUMERICAL MODELING OF AEROSOL TRANSPORT AND DYNAMICS (KEY_N 7)

Akshai K. RUNCHAL *CFDVRi, Mount View Complex, McLeod Ganj, Himachal Pradesh-176219, India*

ABSTRACT: H Aerosols are particles suspended in a gaseous medium. The particles can be directly emitted into the gas or condense into the gas. Both atmospheric and indoor aerosols have a significant impact on health. Aerosols are also released in industrial accident scenarios including in nuclear reactor containment vessels. In all these cases, it is vital to be able to predict with accuracy the aerosol evolution and transport.

Processes involved in the evolution or change in aerosol size distribution include coagulation (agglomeration), nucleation and condensation/evaporation. Aerosol transport and dynamics are governed by the Aerosol General Dynamic Equation (GDE), which is a partial integro-differential equation. Numerical solutions exist for the GDE with complex coagulation kernels are rare. So we have to resort to numerical methods to obtain solutions for realistic scenarios. In this study we first review the numerical methods used to solve the aerosol GDE with coagulation and settling terms. We then discuss the development of a numerical model for aerosol transport and dynamics within the ANSWER finite volume CFD code. Coagulation was modeled using a sectional method where the particle size range was divided into a finite number of bins. A splitting factor distributes newly agglomerated particles between existing nodes in a volume (and mass) conserving fashion. Multiple coagulation kernels (frequency of collision between particles of different sizes) were incorporated into the developed aerosol module, including the constant kernel and the Fuchs kernel. Particle settling and deposition processes were modeled through drift fluxes. Flow and aerosol transport and dynamics in an aerosol test facility was analyzed using the ANSWER (CFD) code augmented with the developed aerosol module. In this case, simulation results were compared with experimental results where a fan was used to achieve well mixed flow and an initially homogeneous aerosol distribution. Reasonable agreement with experimental results was observed.

BIOGRAPHY: He is an acknowledged expert in Computational Fluid Dynamics (CFD) and numerical simulation of flow, heat and mass transport processes in engineering and environmental sciences. In late 1960's under the guidance of Prof. D.B. Spalding at Imperial College Dr Runchal, and Dr Wolfshtein, developed the Finite Volume Method (FVM) for CFD applications. In his professional career spanning over 50 years, Dr. Runchal has provided services to over 200 leading industrial, government and research organizations for a broad range of industrial, environmental and research projects. He has appeared as an expert witness. His clients have included many Fortune 500 corporations, governments and leading research organizations in more than 25 countries.

He is the principal author of the ANSWER®, PORFLOW®, TIDAL® and RADM CFD software tools which deal with a broad spectrum of problems in fluid dynamics, heat and mass transport, and environmental pollution and are widely employed by commercial, academic and research organizations across the world.

Dr. Runchal received his Ph.D. from Imperial College, London (UK) in 1969 and a Bachelor of Engineering with Honors from Punjab Engineering College (Chandigarh, India) in 1964. He has taught and guided research students at UCLA, Cal Tech, CSU (Northridge), Imperial College (London), and I.I.T. (Kanpur). He is the author or co-author of 7 books and over 200 technical publications. He has delivered keynote and invited talks at more than 100 conferences and seminars in the U.S.A., the U.K., France, Germany, India, Australia, Belgium, Sweden, Croatia, Czechoslovakia and Slovenia. Dr. Runchal is the founder and President of Analytic & Computational Research, Inc. and the CFD Virtual Reality Institute. He was previously employed as Manager, Advanced Technology Group, Dames & Moore, Los Angeles, and Technical Director, CHAM, London. Dr. Runchal is a Fellow of the ASME and is active as an advisor with many of the IIT's in India. For the last few years he has been deeply involved in reviving the lost heritage of Kangra Miniature Paintings through the Kangra Arts Promotion Society – an NGO of which is the President.

Conference Program overview

International Conference on Materials and Energy
ICOME'17, Tianjin, China, July 06-09, 2017

Symp. Int Conf.
Application Porous Media

CONFERENCE PROGRAM

Thursday 06 July 2017 — Hyatt Regency Hotel Registration (15h00-19h00)

Friday 07 July

8:20	Registration
9:00	Opening (MR)
9:30	Key_n 1 Pr. Marcelo De Lemos (MR)
10:15	Key_n 2 Pr. Jing Liu (MR)
11:00	CB (HS)
11:20	S1 (MR) HMTO / S2 (SR) PMMF; POSTER (HS)
12:00	Lunch
13:30	Key_n 3 Pr. Alberto Coronas (MR)
14:15	Key_n 4 Pr. Akira Nakayama (MR)
15:00	CB (HS)
15:20	Key_n 5 Pr. Stephen Wilson (MR)
16:05	S3 (MR) HMTO / S4 (SR) PMMF; S3-4 ES POSTER (HS)
17:00	Visit City University

Presentation & poster jury

Saturday 08 July

8:20	Registration
9:00	Key_n 6 Pr. Victoria Timchenko (MR)
9:45	Key_n 7 Expr Akshai Runchal (MR)
10:30	S5 (MR) SRE / S6 (SR) MAp; POSTER CB (HS)
11:15	Key_n 8 Pr. Li-Zhi Zhang (MR)
12:00	Lunch
13:30	Key_n 9 Pr. Jordan Hristov (MR) / Key_n 10 Pr. Jan Taler (SR)
14:15	Key_n 11 Pr. Shanmugam Dhinakaran (MR)
15:00	CB (HS)
15:20	Key_n 12 Pr. Li Chen (MR) / Key_n 13 Pr. Bassir David (SR)
16:05	S7 (MR) IP / S8 (SR) TBMA; S7-8 PhM POSTER (HS)
17:00	Banquet dinner, Awards

Presentation& poster jury — Presentation & poster jury

Sunday 09 July

8:30	Key_n 14 Pr. Peixue Jiang (MR)
9:15	Key_n 15 Expr . Khalid Benhamou (MR)
10:00	CB (HS)
10:25	Key_n 16 Pr. Jalel Labidi (MR) / Key_n 17 Pr. Yu Zhi Bin (SR)
11:10	Key_n 18 Pr. Liu Wei (MR)
12:00	Lunch
13:30	Key_n 19 Pr. Gang Pei (MR)
14:15	S9 TBMA (MR) / S10 IP (SR); S9-10 ES POSTER (HS)
15:00	Key_n 20 Pr. Marcel Lacroix (MR)
15:40	Closing (MR)
16:00	Commissions/ sci. / Org.

Location Hyatt Regency Hotel

Key_n : keynotes
S : session
CB : Coffee Break

MR Main Room
SR Second Room
HS Hall Space

Conference Program details

1. Thursday July 06th and Friday July 07th

Day	Period	Time	Program		
Thursday July 06		15:00 – 19:00	***Registration***		
Friday July 07	Morning	08:20 – 09:00	***Registration***		
		09:00	***Opening Ceremony***		
		09:30	(KEY_N 1) TURBULENCE IN POROUS MEDIA Marcelo De Lemos		
		10:15	(KEY_N 2) LIQUID METALS IN ADVANCED THERMAL MANAGEMENT AND ENERGY HARVESTING Jing Liu		
		11:00	*Coffee Break*		
		11:20	***Session*** S1 HMTO (MR)	***Session*** S2 PMMF (SR)	
		11:40 – 12:00	Poster session S1 & S2 (HS)		
		12:00	***Lunch***		
	Afternoon	13:30	(KEY_N 3) CURRENT DEVELOPMENT AND PERSPECTIVES OF RESORPTION HEAT PUMPS. Coronas Alberto		
		14:15	(KEY_N 4) A POROUS MEDIA THEORY FOR DETERMINATION OF THE LIMITING CURRENT DENSITY IN AN ELECTRODIALYSIS DESALINATION Akira Nakayama		
		15:00	*Coffee Break*		
		15:20	(KEY_N 5) THE LIFETIMES OF EVAPORATING DROPLETS MATERIALS AND ENERGY FROM LIGNIN Stephen Wilson		
		16:05	S3 HMTO (MR)	S4 PMMF (SR)	S3-4 ES (HS)
		16:35 – 17:00	Poster session S3 , S4 & S3-4 (HS)		

2. Saturday July 08th

Saturday July 08

Morning	
08:20 – 09:00	***Registration***
09:00	(KEY_N 6) PASSIVE COOLING OF BUILDING INTEGRATED PHOTOVOLTAIC SYSTEMS BY MEANS OF TURBULENT NATURAL CONVECTION Victoria Timchenko
09:45	(KEY_N 7) NUMERICAL MODELING OF AEROSOL TRANSPORT AND DYNAMICS Akshai Runchal
10:30	**Session** S5 SRE (MR) / **Session** S6 MAp (SR)
	Coffee Break
	Poster session S5 & S6 (HS)
11:15	(KEY_N 8) MODELING OF DYNAMIC DEPOSITION AND FILTRATION PROCESSES OF AIRBORNE PARTICLES BY A SINGLE FIBER WITH A COUPLED LATTICE BOLTZMANN AND DISCRETE ELEMENT METHOD Li-Zhi Zhang
12:00	***Lunch***
Afternoon	
13:30	(KEY_N 9) TIME-SPACE-FRACTIONAL MODELS OF ANOMALOUS DIFFUSION: PHYSICAL BASIS, APPROXIMATE SOLUTIONS AND ANALYSIS FOR APPLICATION IN MATERIAL SCIENCE J. Hristov / (KEY_N 10) MODELING OF FIXED BED AND ROTARY REGENERATORS J. Taler
14:15	(KEY_N 11) ROLE OF POROUS MEDIA THEORY IN BIOMEDICAL ENGINEERING Shanmugam DHINAKARAN
15:00	*Coffee Break*
15:20	(KEY_N 12) ADVANCED PORE-SCALE MODEL FOR MULTIPLE PHYSICOCHEMICAL PROCESSES IN POROUS MEDIA L. Chen / (KEY_N 13) MECHANICAL COMPRESSION ANALYSIS OF BIOSOURCED POLYMERS ON 3D PRINTING Bassir David
16:05	S7 IP (MR) / S8 TBMA (SR) / S7-8 PhIM (HS)
16:35 – 17:00	Poster session S7 & S8& S7-8 (HS)

3. Sunday July 09th

Sunday July 09	Morning	08:30	(KEY_N 14) CONVECTION HEAT TRANSFER AND TWO-PHASE FLOW IN MICRO/NANO POROUS STRUCTURES Peixue Jiang		
		09:15	(KEY_N 15) IMPLEMENTING THE PARIS AGREEMENT BEYOND MARRAKECH COP22: GREENING THE WORLD' S LARGEST FERTILIZER INDUSTRIES Khalid Benhamou		
		10:00	*Coffee Break*		
		10:25	(KEY_N 16) MATERIALS AND ENERGY FROM LIGNIN Jalel Labidi	(KEY_N 17) ADVANCES IN THERMODYNAMIC POWER CYCLES FOR UTILISING LOW-GRADE HEAT SOURCES Yu Zhibin	
		11:10	(KEY_N 18) DEVELOPMENT OF BIPOROUS MEDIA AND ITS APPLICATION IN LOOP HEAT PIPE Liu Wei		
		12:00	***Lunch***		
	Afternoon	13:30	(KEY_N 19) A COMBINED SYSTEM OF SOLAR ENERGY AND RADIATION COOLING Gang Pei		
		14:15	**Session** S9 TBMA (MR)	**Session** S10 IP (SR)	**Session** S9-10 ES (HS)
			Poster session S9 & S10 & S9-10 (HS)		
		15:00	(KEY_N 20) TRANSITION TO RENEWABLE ENERGIES: A REALITY CHECK Marcel Lacroix		
		15:40	***Closing ceremony***		
		16:00 – 17:00	Scientific & Organising Comissions		

List of Sessions/Contributions per session

1. Sessions and acronyms

Acronym	Session name
ES	ENERGETIC SYSTEMS
TB-BM	THERMAL BUILDING & BUILDING MATERIALS
PrM	POUROUS MATERIALS & MULTIPHASE
HTMO	HEAT AND MASS TRANSFER OPTIMIZATION
IP	INNOVATIVE PROCESSES
SRE	STORAGE &RENEWABLE ENERGIE
MA	MATERIALS & APPLICATIONS
PhIM	PHYSICS & INNOVATIVE MATERIALS

2. Find your session number and acronym by communication ID

ID	Session	Acronym
2	S9-10	ES
3	S1	HMT
4	S7	IP
5	S5	SRE
6	S4	PrM
8	S8	TB-BM
9	S8	TB-BM
11	S3-4	ES
13	S8	TB-BM
14	S6	MA
15	S6	MA
16	S7-8	PhIM
17	S6	MA
18	S2	PrM
19	S3-4	ES
20	S1	HMT
21	S3	HMT
23	S6	MA
24	S1	HMT
26	S5	SRE
27	S5	SRE
28	S3-4	ES
29	S4	PrM
30	S8	TB-BM
31	S9	TB-BM
32	S7-8	PhIM

ID	Session	Acronym
33	S8	TB-BM
35	S3	HMT
75	S2	PrM
88	S7	IP
90	S2	PrM
91	S3-4	ES
92	S8	TB-BM
93	S3-4	ES
95	S2	PrM
96	S3-4	ES
97	S4	PrM
98	S7-8	PhIM
100	S5	SRE
102	S10	IP
102	S6	MA
103	S9-10	ES
104	S3-4	ES
106	S7-8	PhIM
107	S5	SRE
110	S7-8	PhIM
111	S3	HMT
114	S10	IP
115	S5	SRE
117	S4	PrM
118	S7	IP
119	S6	MA

ID	Session	Acronym
120	S5	SRE
121	S2	PrM
122	S5	SRE
123	S8	TB-BM
124	S3	HMT
125	S3	HMT
126	S6	MA
127	S9	TB-BM
128	S5	SRE
129	S5	SRE
130	S1	HMT
131	S5	SRE
133	S9	TB-BM
134	S6	MA
135	S9	TB-BM
137	S9-10	ES
140	S10	IP
141	S5	SRE
142	S9-10	ES
143	S5	SRE
144	S1	HMT
145	S7	IP
146	S7-8	PhIM
147	S9	TB-BM
148	S1	HMT
149	S5	SRE
183	S10	IP

ID	Session	Acronym
187	S7-8	PhIM
188	S6	MA
190	S2	PrM
192	S4	PrM
193	S9-10	ES
194	S4	PrM
196	S7-8	PhIM
198	S4	PrM
200	S10	IP
201	S3	HMT
202	S1	HMT
PM 1	S7	IP
PM 10	S10	IP
PM 11	S9-10	ES
PM 12	S7-8	PhIM
PM 13	S9	TB-BM
PM 2	S2	PrM
PM 3	S7-8	PhIM
PM 4	S6	MA
PM 5	S3	HMT
PM 6	S7-8	PhIM
PM 7	S3	HMT
PM 8	S4	PrM
PM 9	S9-10	ES

3. Find your communication ID number from session acronym

Friday 07 July

Time	S1 (MR) MHTO	S2 (SR) PMMF
11:20	3	18
11:24	144	190
11:28	148	90
11:32	24	PM 2
11:36	130	95
11:40	20	121
11:44		75
12:00	Poster	

Time	S3 (MR) HMTO	S4 (SR) PMMF	S3-4 (HS) ES
16:05	124	29	11
16:09	35	198	19
16:13	111	97	91
16:17	PM 5	PM 8	28
16:21	125	6	93
16:25	PM 7	192	96
16:29	21	194	104
16:33	201	117	
17:00	Poster		

Saturday 08 July

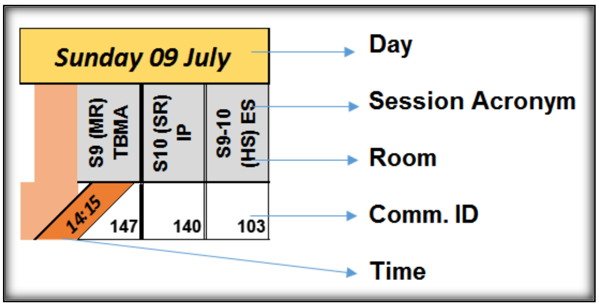
Time	S5 (MR) SRE	S6 (SR) MAp
10:30	100	14
10:34	115	126
10:38	120	119
10:42	131	17
10:46	141	102
10:50	143	15
10:54	149	PM 4
10:58	26	134
11:15	Poster (129,23, 188,107, 5,122,128,27)	

Time	S7 (MR) IP	S8 (SR) TBMA	S7-8 (HS) PhIM
16:05	4	8	PM 3
16:09	118	92	98
16:13	145	33	146
16:17	PM 1	123	32
16:21	88	30	PM 6
16:25		13	196
16:29		9	PM 12
17:00	Poster		

Sunday 09 July

Time	S9 (MR) TBMA	S10 (SR) IP	S9-10 (HS) ES
14:15	147	140	103
14:19	31	102	2
14:23	133	200	142
14:27	127	114	PM 9
14:31	135	PM 10	PM 11
14:35	PM 13	183	193
14:39	132		137
15:00	Poster		

Explanation ➔



Energetic Systems

Session (Room)	ID	Time	Title
S3-4 (HS) ; July 07	11	16:05	Prototype's Seizing and Design of a Solar Refrigerator Based on Solid Adsorption *Hicham Boushaba, Abdelaziz Mimet and Abdelouahid Ezzarfi*
	19	16:09	Separation Efficiency at Distillation With Dynamically Controlled Irrigation of a Structured Packings. *A. Pavlenko, Oleg Volodin, V. Zhukov, N. Pecherkin, A. Nazarov, X. Li, Hong Sui, Xin Gao, Hong Li*
	91	16:13	Research On Performance of Air-Conditioning System *Hua Chen and Dingli Duan*
	28	16:17	Thermodynamic Analysis of Absorption Systems For Heat Transport In District Networks *Antonio Atienza-Márquez, Joan Carles Bruno and Alberto Coronas*
	93	16:21	Experimental Research On The Operating Performance of The Small Water Source Heat Pump System *Yuting Li, Hua Chen and Zhiguang Liu*
	96	16:25	Comparative Study Of Cooling Of Thermoelectric Generators *Vamsi Vegamoor, Muhammad Sajid, Yasser Al Hamidi and Ibrahim Hassan*
	104	16:29	Decision Support For Wind Energy Potential Assessment Of Morocco Using Bimodal Mixture Weibull Distribution. *Abderrahman Mouradi and Abdelaziz Mimet*
S9-10 (HS) ; July 09	103	14:15	Numerical Simulation On Superheated Steam Fluidized Bed Drying At Different Operating Pressures *Zhifeng Xiao, Fan Zhang and Nanxing Wu*
	2	14:19	A Computational Study Of Varying Fuels On A Buner Optimised By Using Entropy Generation Analysis *Morsli Souad., and Sabeur Amina.*
	142	14:23	Fault Tolerant Control For Energy Power Systems *Harouna Souley Ali, Ahlem Sassi, Michel Zasadzinski, and Kamel Abderrahim*
	PM 9	14:27	Modeling of Fixed Bed And Rotary Regenerators *JanTaler, Pawel Oclon*
	PM 11	14:31	Effect of Cooling Rate on the Structure of Onion Epidermal Cells *Jinshan Wang, Kai Zhu, Baomin Dai,Yabo Wang, Yanqi Xie*
	193	14:35	Experimental Investigation On Performance Of Air-Source Heat Pump System Using Refrigerant R32 With Flash-Tank *Jie Xue, Xianmin Guo and Liping Xue*
	137	14:--	Modeling of transport phenomena in the dessicant wheel of a solar air conditioning system *Youcef Kerkoub , Ahmed Benzaoui , Liela Merabti , Mohamed Abbas*

Innovative Process

Session (Room)	ID	Time	Title
S7 (MR); July 08	4	16:05	Simulation of interaction between solid particle and liquid droplet in the liquid–gas–particle system *Bo Yang, Sheng Chen and Chuguang Zheng*
	118	16:09	A study on the performance of induced gas flotation machine using multiple-size-group (musig) model *Jigu Lee and Youn-Jea Kim*
	145	16:13	Drag reduction of free falling sphere in liquid by surface treatment *Bin Mohamad, and Khellil Sefiane*
	PM 1	16:17	A brief introduction to the enhancement effect of nanofluid in heat transfer process *Shen Jiang, Kang Fang-yuan*
	88	16:21	Functionalization of wood by mechanical incrustation of particles using supercritical nitrogen jet *Azza Zerriaa, Christine Gérardin, Mohammed El Ganaoui, Abdel Tazibt and Slimane Gabsi*
S10 (SR); July 09	140	14:15	Effect of ultrasound-assisted osmotic dehydration on the convective drying with correction for shrinkage and quality assessments of strawberry *Ezzeddine Amami, Wissal Khezami, Salma Mezrigui, Laxmikant S. Badwaik, Asma Kammoun Bejar, Carmen Tellez Perez and Nabil Kechaou*
	102	14:19	Numerical simulation on ceramic slurry spray drying process based on CFD-DPM approach *Zhifeng Xiao, Fan Zhang, Nanxing Wu and Jianbo Le*
	200	14:23	The phase transformation and electrochemical evaluation of TiMg based alloys modified by Ni addition *Zhao Zhang, Omar Elkedim, Guolin Song, David Bassir and Guoyi Tang*
	114	14:27	Numerical simulation of streamer propagation by adbquickest scheme *Abdelkader Mekri, Abdelghani Boukreris and Ali Hennad*
	PM 10	14:31	Paper modeling of dynamic filtration processes of airborne particles by a single electret fiber considering charge decay *Rong-rong Cai, Li-Zhi Zhang*
	183	14:35	Electrochemical performance of the V_2O_5 and VO_2 thin films synthesized by spray pyrolysis technique *A. Mrigal, M. Addou, Hajar Ftouhi, M. El Jouad, M. Jbilou, M. Diani, S. Khannyra and B. El Moumni*

Heat and Mass Transfer Optimisation

Session (Room)	ID	Time	Title
S3 (MR) ; July 07	124	16:05	Numerical Simulation And Experimental Study On The Performance Of Triangular Fin Heat Exchanger *Zhe Liu and Zeqin Liu*
	35	16:09	Numerical Investigation On Urban Street Air Pollution Problem Using Lattice Boltzmann Method With Subgrid Modeling *Yongliang Feng, Johann Miranda, Jerome Jacob and Pierre Sagaut*
	111	16:13	Computational Study Of Zigzag Spacer Design With Elliptical Cross-Section Filaments *Gohar Shoukat, Farhan Ellahi, Muhammad Sajid and Emad Uddin*
	PM 5	16:17	Experimental Investigation On Convective Heat Transfer Of Regenerator At Room T emperature *Wang Qi, Liu Bin, Li Peng*
	125	16:21	Study Of Experimental Diagnostic Methodology For Thermal Characterization Of Building Wall *Yingying Yang, Tingting Vogt-Wu, Alain Sempy, Jean Dumoulin and Jean-Christophe Batsale*
	PM 7	16:25	Heat And Mass Transfer Simulation Of Sea Cucumber (Stichopus Japonicus) In Drying *Zhao Haibo*
	21	16:29	Three Dimensional Fluid Flow Within A Rectangular Channel With Several Spherical (And/Or) Elliptical Blocks: Lattice Boltzmann Investigation *Abdelkader Boutra, Karim Ragui, Nabila Labsi, and Youb Khaled Benkahla*
	201	16 :33	Analogy Between Evaporating Sessile Drops And Evaporation From Capillary Tube *Cosimo Buffone, Khellil Sefiane, Rachid Bennacer and Bin Liu*
S1 (MR) ; July 07	3	11:20	An Analysis On Free Convection Flow, Heat Transfer And Entropy Generation In Undulated Cavity Filled With Nanofluids *Boudaoud Warda, Sabeur Amina, and Morsli Souad*
	144	11:24	Wall Temperature Mapping During Flow Boiling In A Pdms Microchannel With Integrated Pressure Sensors *Sofia Korniliou, Coinneach Dover, John Christy, Souad Harmand, Anthony J. Walton and Khellil Sefiane*
	148	11:28	Performance Test And Analysis On Tubular Indirect Evaporative Cooler *Lijuan Fan and Xiang Huang*
	24	11:32	Experimental Investigation Of Dynamics Of Suspended Droplet Evaporation *Alexandr Nazarov and Bochkareva Elen*
	130	11:36	Experiment Study For Refrigeration Performance Of 4A-Zeolite Meleculor Sieves Adsorption Refrigeration System *Wenyuan Zhao, Zeqin Liu, Shuang Cai and Hongtao Du*
	20	11:40	Oscillatory Flow Within A Three Dimensional Cylindrical Annulus: The Critical Buoyancy And Annulus' Aspect Ratios For The Oscillation Stability *Karim Ragui, Abdelkader Boutra, and Youb Khaled Benkahla*

Materials & Applications

Session (Room)	ID	Time	Title
S6 (SR); July 08	**14**	10:30	Numerical analysis of multi-layered structures subjected to fire *Van Diem Thi, Mengya Li, Mohammed El Ganaoui, Mourad Khelifa and Yann Rogaume*
	126	10:34	Development of a potable folding stove-powered thermoelectric generator *Guoneng Li, Youqu Zheng, Lingyu Zhu and Shuai Zhang*
	119	10:38	Tannins general classification, characterization techniques and potential applications *Pedro Luis de Hoyos Martinez, Jalel Labidi and Fatima Charrier-El Bouthoury*
	17	10:42	Heat transfer enhancement, transitional processes and critical phenomena at boiling and evaporation on microstructured surfaces. *Aleksandr Pavlenko*
	102	10:46	Numerical simulation on ceramic slurry spray drying process based on cfd-dpm approach *Zhifeng Xiao, Fan Zhang, Nanxing Wu and Jianbo Le*
	15	10:50	A simple inverse method for monitoring the thermal characteristics of the limestone in an individual house *Tingting Vogt Wu, Emmanuel Antczak, Franck Brachelet and Didier Defer*
	PM 4	10:54	Effect of concentration of nanofluid and temperature of bottom plate on equilibrium contact angle of droplet *Shan Langliang, Liu Bin*
	134	10:58	Numerical methods for solving two-dimensional continuity equation applied for the electrical discharges *Abdelghani Boukreris, Abdelkader Mekri and Ali Hennad*
	23	Pst.	Waste transformation of plastic bags by wet polymer binding *Raoelivololona Rakotobe Tefy, Ramaroson Mamiharijaona and Raminosoa Chrysostome*
	188	Pst.	Theoretical and experimental investigation of structural, electronic and optical properties of Nd doped ZnO *Hajar Cherrad, Mohammed Addou, Mehdi Hssein, Khadija Bahedi, Asmaa Mrigal, El Mehdi Salmani, Mustapha Rouchdi and Ahmed Mzred*

Physics & Innovative Materials

Session (Room)	ID	Time	Title
S7-8 (HS) ; July 08	PM 3	16:05	Analysis Of Evaporation Process And Deposition Patterns Of Al2O3-H2O Nanofluid *Li Qinqin, Liu Bin*
	98	16:09	Experimental Study Of Oxygen Diffusion In Aluminum Alloy At High Temperature *Benantar Chaouki, Attafi Samir and Aklouche-Benouaguef Sabiha*
	146	16:13	The Effect Of The Morphology Of Repeating Microstructures On The Contact Line Dynamics Of Sessile Water Droplets *Coinneach Dover, Gail Duursma, Jon Terry and Khellil Sefiane*
	32	16:17	Study Of The Thermal Behavior Of A Concrete Block Containing Phase Change Materials With Ventilation Tubes *Amine Laaouatni, Nadia Martaj and Mohamed El Omari*
	PM 6	16:21	Experimental Study On Brownian Motion Of Al2O3-H2O Nanofluids *Liu Bin, Wang Mei-Xia, Guo Heng*
	196	16:25	Modeling And Experimental Validation Of The Hygro-Mechanical Behavior Of Microscopic Structure Of Wood *Chady El Hachem, Kamilia Abahri and Rachid Bennacer*
	PM 12	16:29	The Deposition Pattern Of Nanofluid Droplets After Evaporation *Li Tianying, Liu Bin, Ma Xiaoyan*
	16	Pst.	Thermal Storage In Sand Fluidized Bed: A Numerical And Experimental Study For The Characterization Of The Reactor *Nadjiba Mahfoudi, Abdelhamid Kheiri and Moummi Abdelhafid*
	106	Pst.	Design, Construction, Testing And Manufacturing Of Horizontal Axis Wind Turbines. *Mohammed Lahda, Abderrahman Mouradi, Abdelaziz Mimet and Mohammed Ibenyaich*
	187	Pst.	Effect Of Deposition Temperature On The Structural, Morphological And Electrochemic Properties Of V2O5 Produced By Spray Pyrolysis *Asmaa Mrigal, Mohammed Addou, Mohammed El Jouad, Mehdi Hssein and Hajar Cherrad*
	110	Pst.	Fatigue Life Estimation Of Components With Use A Non-Linear Energy Model Coupled A Finite Element Method *Aid Abdelkrim, and Aissa Abderrahmane*

Pourous Materials

Session (Room)	ID	Time	Title
S2 (SR) ; July 07	18	11:20	Finite Element Modeling Of Wood-Cement Panels Exposed To Fire *Mengya Li, Van Diem Thi, Vincent Nicolas, Mourad Khelifa and Alain Celzard*
	190	11:24	Experimental Analysis Of A Vapor-Liquid Separated Flat Loop Heat Pipe Evaporator System *Yang Yang, Zhu Kai, Wang Yabo, Wei Jie and Chen Sarula*
	90	11:28	Active Wall Through A Porous Media Foam Type: Flow And Transfer Characterization *Rafael C. Deptulski, and Gisele M. R. Vieira*
	PM 2	11:32	A Review On The Simulation Models Of Binary Gases Adsorption Separated With Porous Materi als *Shuangjun Li, Shuai Deng, Li Zhao, Ruikai Zhao, Junnan He, Bowen Liu, Taiwei Sun*
	95	11:36	Experimental Study Of Drying And Imbibition Cycles In Concrete: Effects Of Sample Shape And Boundary Condition *Xiaoyan Ma, Aveline Darquennes, Farid Benboudjema, Georges Nahas and Rachid Bennacer*
	121	11:40	Solar Energy And Refrigeration By Sorption *Slimane Gabsi*
	75	11:44	Numerical Simulation Of Three-Dimensional Double Diffusive Convection In A Bi-Layered Cubical Porous Enclosure *Noureddine Hadidi and Yacine Ould-Amer*
S4 (SR) ; July 07	29	16:05	Experimental Method And Numerical Investigation For The Prediction Of Equivalent Thermo Physical Proprieties Of A Wood-Cement Material *Faiza Mnasri, Rafael C. Deptulski,*
	198	16:09	Determination Of The 3D Temperature Distribution Of The Skin During Hyperthermia *Yabo Wang, Kai Zhu, Long Yang and Yuan Shi*
	97	16:13	Effect Of A Constant Magnetic Field On Mixed Convection In A Horizontal Porous Layer Filled With A Power Law Fluid *Chahtour, Haykel Ben Hamed, Hassen Beji and Amenallah Guizani*
	PM 8	16:17	Influence Of Substrate Temperature On Nanofluid Droplet Evaporation *Wang Yahui, Di Qianqian, Liu Bin, Ma Xiaoyan*
	6	16:21	Thermal Behavior Of Ceramic Particles In A Gaseous Medium At High Temperature *Aissa Abderrahmane, Sahnoun Mohammed, Abdelouahab Mohamed and Fares Redouane*
	192	16:25	The Influence Of The Structural Parameters Of Gas-Liquid Separator On The Performance Of Ejector Refrigeration System *Jinpeng Suo, Xianmin Guo and Yanshuang Huai*
	194	16:29	Experimental Study On The Effect Of Evaporation Temperature On The Performance Of Air-Conditioning Freezer Double Unit *Huai Yuan Guo, Xian Min Guo and Kang Huang*
	117	16:33	Three-Dimensional Modeling Of A Solar Heat Exchanger Partially Filled With Porous Media *Fatma Habbachi, Fakhreddine and S. Oueslati*

Storage & Renewable Energy

Session (Room)	ID	Time	Title
S5 (MR) ; July 08	**100**	10:30	Experimental Study On Temperature Dependence Of Physicochemical And Electrochemical Properties Of Electrolyte In All Vanadium Flow Battery *Shengsheng Yin and Leping Zhou*
	115	10:34	Investigation Of Melting Process Of PCM In A Square Cavity With A Fin *Muslum Arici, Ensar Tutuncu, Hasan Karabay and Antonio Campo*
	120	10:38	Effect Of PCM Extinction Coefficients On Thermal Performance Of Double Glazing Units *Changyu Liu, Yangyang Wu and Dong Li*
	131	10:42	Performance Assessment Of A Domestic Micro-Cogeneration System Under Heat Demand-Following Operation *Herie Park and Rachid Bennacer*
	141	10:46	Analysis Of The Influence Of The Lug On Electrochemical Properties Of Zn-Nickel Single Flow Battery *Shouguang Yao, Jingxian Yuan, Yucai Wang, Min Xiao, Yunhui Zhao, Jie Cheng and Yaju Shen*
	143	10:50	Design And 2d Modeling Of Fractal Mini Heat Sink-Based Pv/T Hybrid Systems *Lahoucine Ouhsaine, Scipioni Angel, El Ganaoui Mohammed and Abdelaziz Mimet*
	149	10:54	Theoretical And Experimental Study On The Refrigerant DR140 Compared To R134a And R22 *Shengchun Liu, Yuchen Zhao, Xueqiang Li, Zhili Sun, Hailong Li and Fenping Lu*
	26	10:58	New Optimization Method For Energy Production By Wind Farm *Bilal Amghar, Ikram El Abbassi and Abdelmoumen Darcherif*
	129	Pst.	Numeric Simulation Of Fluid Flow In Solar Collector With Rectangular Inclined Baffles And Rectangular Inclined Perforated Baffles *Henaoui Mustapha, Aliane Khaled and Sari-Hassoun Zakaria*
	107	Pst.	The Data Acquisition And Control Unit Of Horizontal Axis Wind Turbine *Mouradi Abderrahman, Mohamed Lahda, Abdelaziz Mimet and Mohammed Ibenyaich*
	5	Pst.	Thermal Modelling Of Building Incorporated Pcm Wallboards In Underfloor Heating System *Lahoucine Ouhsaine, Mohammed El Ganaoui, Abdelaziz Mimet and Monica Siroux*
	122	Pst.	Feasibility Study Of Stand-Alone Hybrid Energy Systems For Application Of Buildings In Rural Areas In Comoros *Kassim Mohamed Aboudou and El Gananoui Mohammed*
	128	Pst.	Design Optimization Study Of A Coupled Solar Collector Latent Heat Storage Unit Using Rectangular Slabs *Radouane Elbahjaoui, and Hamid El Qarnia*
	27	Pst.	Mart Maintenance Model For Hybrid Renewable Energies Plants. Application To Microgrids In Southern Contries *Morad Mahmoudi, A.-Moumen Darcherif and Ikram Elabbassi*

Thermal Buildings and Building Materials

Session (Room)	ID	Time	Title
S8 (SR) ; July 08	8	16:05	Assessment Of Energy Benefits Of Combined Use Of Green Roofs With Pcm Panels In Buildings *Rabah Djedjig, and Lahousine Ouhsaine*
	92	16:09	Experimental Study On Performance Of Combined Cold Coil Dedicated Ventilation With Dry Cooling Coil System For Decoupling Dehumidification From Cooling *Chen Hua, Yang Yaxing and Zhang Zhiqiangs*
	33	16:13	Modeling Of Composite Thermal Walls *Juliana Avila and Kamal Ismail*
	123	16:17	Performance Analysis Of A Building-Integrated Photovoltaic–Radiative Cooling System *Bin Zhao, Mingke Hu, Xianze Ao and Gang Pei*
	30	16:21	Numerical And Experimental Investigation Of The Thermal Behavior Of The Building Integrating The Occupant Thermal Comfort *Abed Al Waheed Hawila, Abdelatif Merabtine and Nadége Troussier*
	13	16:25	Behavior Of Fiber-Reinforced Mortar In Acids Environment *Belhadj Belkacem, Bederina Madani and Queneudec Michele*
	9	16:29	Paper Recycling For The Making Of Constructions Materials *Rakotobe Tefy Raoelivololona, Mamiharijaona Ramaroson and Chrysostome Raminosoa*
S9 (MR); July 09	147	14:31	Conception Of A New Building Material: Crude Clay Bricks Including Phosphogypsum *Houda Mekki, Maha Zaied, Emna Ammar and Nabil Kechaou*
	31	14:19	Numerical Investigation Of The Thermal Performance Of An External Wall Containing PCM *Yassine Kharbouch, Lahoucine Ouhsaine, and Abdelaziz Mimet*
	133	14:23	Application Research Of The Heating Performance Of Heat-Source-Tower Heat Pump Applied In Cold Region *Hao Li, Jun Zhao, Minxia Li, Xuelong Chen, Shuai Deng and Li Zhao*
	127	14:27	Hygrothermal Behavior Of Flax Shives Used As Insulation Material In An Attic Of A Traditional House *Franck Brachelet, Mounir Asli, Antczak Emmanuel, Flore Brue, Didier Defer and Alain Lucas*
	PM 13	14:35	Thermal Conductivity Coefficient Of Molecular Sieve Aluminum Wire Mixed Adsorbent Measured By Spheroid Method *Liu Zeqin, Cai Shuang, Yang He*
	135	14:39	Numerical And Experimental Investigation On The Thermal Behavior Of The Building Integrating Occupant Thermal Comfort. *Abed Al Waheed Hawila, Abdelatif Merabtine and Nadége Troussier*

ICOME 17 Award

Eng. Launching of Averroes 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)*

Fr. Le lancement du prix Averroès aura lieu lors de cette conférence, et ambitionne à mettre en exergue un scientifique ou un décideur ayant contribué significativement au développement et à l'épanouissement de partenariat international avec présence de résultats et formation de jeunes chercheurs et inscription de manière pérenne dans la durée.

> ***"L'ignorance mène à la peur, la peur mène à la haine et la haine conduit à la violence. Voilà l'équation"*** *(Averroès, 1126-1198)*

Averroes prize 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.*

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CONFERENCE PROGRAM

Thursday 06 July 2017 — **Hyatt Regency Hotel Registration (15h00-19h00)**

Friday 07 July

8:20	Registration
9:00	Opening (MR)
9:30	Key_n 1 Pr. Marcelo De Lemos (MR)
10:15	Key_n 2 Pr. Jing Liu (MR)
11:00	CB (HS)
11:20	S1 (MR) HMTO / S2 (SR) PMMF / POSTER (HS)
12:00	Lunch
13:30	Key_n 3 Pr. Alberto Coronas (MR)
14:15	Key_n 4 Pr. Akira Nakayama (MR)
15:00	CB (HS)
15:20	Key_n 5 Pr. Stephen Wilson (MR)
16:05	S3 (MR) HMTO / S4 (SR) PMMF / S3-4 ES POSTER(HS)
17:00	Visit City University

Presentation & poster jury

Saturday 08 July

8:20	Registration
9:00	Key_n 6 Pr. Victoria Timchenko (MR)
9:45	Key_n 7 Expr Akshai Runchal (MR)
10:30	S5 (MR) SRE / S6 (SR) MAp / POSTER CB (HS)
11:15	Key_n 8 Pr. Li-Zhi Zhang (MR)
12:00	Lunch
13:30	Key_n 9 Pr. Jordan Hristov (MR) / Key_n 10 Pr. Jan Taler (SR)
14:15	Key_n 11 Pr. Shanmugam Dhinakaran (MR)
15:00	CB (HS)
15:20	Key_n 12 Pr. Li Chen (MR) / Key_n 13 Pr. Bassir David (SR)
16:05	S7 (MR) IP / S8 (SR) TBMA / S7-8 PhM POSTER (HS)
17:00	Banquet dinner Awards

8:30 9:15 10:00 10:25 Presentation& poster jury — *Presentation & poster jury*

Sunday 09 July

8:30	Key_n 14 Pr. Peixue Jiang (MR)
9:15	Key_n 15 Expr . Khalid Benhamou (MR)
10:00	CB (HS)
10:25	Key_n 16 Pr. Jalel Labidi (MR) / Key_n 17 Pr. Yu Zhi Bin (SR)
11:10	Key_n 18 Pr. Liu Wei (MR)
12:00	Lunch
13:30	Key_n 19 Pr. Gang Pei (MR)
14:15	S9 TBMA (MR) / S10 IP (SR) / S9-10 ES POSTER (HS)
15:00	Key_n 20 Pr. Marcel Lacroix (MR)
15:40	Closing (MR)
16:00	Commissions/ sci. / Org.

Location Hyatt Regency Hotel

Key_n : keynotes
S : session
CB : Coffee Break

MR Main Room
SR Second Room
HS Hall Space