Program Book

International Conference on

MATERIALS & ENERGY

San Sebastian, Spain

April 30 – May 04, 2018

ICOME'18

Contents

Location of the ICOME'18

The international Delegates

Welcome/Bienvenida/ Ongietorria

After the success of the International Conference on Materials & Energy (ICOME'15) in the nice Mediterranean city Martil – Tétouan in Morocco, followed by the edition 2016 in the beautiful Atlantic city of La Rochelle in France, and the edition 2017 in the beautiful Eastern part of China in Tianjin. ICOME'18 moves to Donostia/San Sebastian a coastal city located in the North of Spain. This edition is Jointly organized with French University of Pau taking advantage from the trans-border position.

ICOME'18 is a meeting dedicated to innovative research that addresses scientific needs of academic researchers, industrial and professionals to explore new horizons of knowledge on various topics in interlink between materials and energy applications fields. The conference will host specialized schools "**From Biomass to bioproducts**" and "**Eco-materials and Energy"** respectively focused on the conversion of lignocellulosic biomass to platform chemicals, fuels and polymers using sustainable bio refinery processes and on sustainable energy and bluidings.

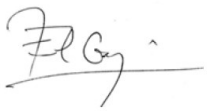
ICOME'18 is scheduled to include high quality contribution during presentation sessions, and to engage participants in interesting discussion sessions.

The ICOME Serie's Chairs (R. Bennacer and M. El Ganaoui), the local ICOME 18 Chairs F. Charrier (University of Pau and the Pays de l'Adour) and J. Labidi (University of the Basque Country) 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.

GENERAL ICOME SERIE'S CHAIRS

Prof. R. Bennacer

Prof. M. El Ganaoui



LOCAL CHAIRS ICOME'18

Prof. F. Charrier - El Bouhtoury

Prof. J. Labidi

Bienvenida

Después del éxito del Congreso Internacional en Materiales y Energía (ICOME'16) en la bella ciudad del Atlántico de La Rochelle en Francia, y de la edición 2017 en la preciosa zona oriental de Tianjin en China, ICOME'18 se traslada a Donostia/San Sebastian, una ciudad costera localizada en el Norte de España. Organizado conjuntamente con la Universidad francesa de Pau aprovechando la posición transfronteriza.

ICOME'18 es un congreso enfocado a la investigación innovadora donde exponer los intereses científicos de los investigadores académicos, industriales y profesionales para explorar nuevos horizontes de conocimiento en diversos campos de aplicación interrelacionados de los materiales y la energía. La conferencia albergará escuelas especializadas "De biomasa a productos de base biológica" y "Eco-materiales y energía", respectivamente, centradas en la conversión de biomasa lignocelulósica en sustancias químicas de plataforma, combustibles y polímeros utilizando procesos de biorefinería sostenible y en energía sostenible y fluidos.

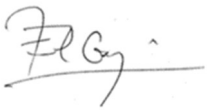
El programa científico de ICOME'18 se compone de contribuciones de alta calidad organizadas en sesiones de presentación e interesantes sesiones de debate donde se facilita la participación e involucración de los asistentes.

ICOME'sseias presidentes (R. Bennacer and M. El Ganaoui), los organizadores de esta edición, Fátima Charrier (University of Pau y el Pays de l'Adour) y Jalel Labidi (Universidad del País Vasco) esperan que todos los asistentes disfruten del evento con gran interés, siendo un gran placer promover el intercambio de conocimiento entre las comunidades del ámbito de los materiales y la energía.

PRESIDENTES DEL ICOME SERIAS

Prof. R. Bennacer

Prof. M. El Ganaoui



PRESIDENTES DEL ICOME'18

Prof. F. Charrier - El Bouhtoury

Prof. J. Labidi

Ongietorria

Frantziako atlantikoko La Rochell-eko hiri ederrean egindako Material eta Energiaren Nazioarteko Konferentziaren (ICOME'16) arrakastaren ondoren, eta Txinaren Ekialdeko Tianjin-eko hiri dotoreko 2017ko edizioaren ostean, ICOME'18 Donostian ospatuko da, Espainiako iparraldean kokaturik dagoen kostaldeko hirian. Paueko Unibertsitate Frantsesarekin batera, transbordoaren posizionamendua aprobetxatuz

ICOME'18 ikerketa berritzaileko ikertzaile akademikoen behar zientifikoei eskainitako topaketa bat da, industria eta aditu askoren artean material eta energiaren arteko jakite berriak miatzeko helburu duena. Konferentziaren barne, "**Biomasatik biogaietara**" eta "**Eko-materialak eta Energia**" izenburua duen ikastaroa eskainiko da, non bio-findegiko prozesuak erabiliz biomasa lignozelulosikoetatik abiatuz gai kimiko, erregai eta biopolimeroen lorpenari buruz jorratuko den eta energia jasangarria eta urdinak erabiliz.

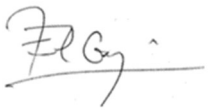
ICOME'18 programaren barnean, kalitate handiko kontribuzio eta aurkezpen saioak egongo dira, non parte-hartzaileek eztabaida saio interesgarrietan parte hartu ahal izango duten.

ICOME'sseias-ko Lehendakariak (R. Bennacer and M. El Ganaoui), Konferentziako zuzendariak, Fatima Charrier-ek (Pau and the Pays de l'Adour Unibertsitatea) eta Jalel Labidi-k (Euskal Herriko Unibertsitatea), topaketan gai interesgarri eta garrantzitsuak aurkituko dituzuelakoan daude, materialen eta energiaren arteko elkar eman bilkura honetan.

ICOME Series-ko LEHENDAKARIAK

R. Bennacer irak.

M. El Ganaoui irak.



ICOME'18-ko LEHENDAKARIAK

F. Charrier - El Bouhtoury irak.

J. Labidi irak.

Foreword / Prólogo / ren Hitzaurre ICOME'18

Extraction, manipulation, transformation and conversion are words that can characterize materials and energy. Indeed their history is a version of the history of humanity that is expressed by their use in times of peace and war. Civilizations evolve in a manner intimately linked to the mastery of materials and energy.

These two-coupled concepts have faith evolved in a complementary way between the artisan and the engineer. Between tests and concept, this coupling has progressed rapidly in a short time to explore new sources of energy and to communicate to the world an unsuspected dimension of comfort, mobility, communication influencing up to social codes and the relationship to nature. With each mutation sociology, habits and behaviors are deeply modified.

The industrial revolution through the binomial coal / steam boosts the use of materials and encourages technical innovations that accompanied by intense research into energy resources have achieved the development of electricity and nuclear energy. Until now, the use of fossil fuels represents more than 80% of their availability, which requires an urgent energy transition that will be possible thanks to citizen participation in political orientations. The search for an efficient and rational use of energy is transferred to the fields of knowledge and research, being a subject of concern for the citizen throughout the world.

Thus by different ways of exploration in different cultures, abstraction is reached at different schools of thought and cultures that at first sight seem diametrically opposed. The Mediterranean basin is not far behind and has played an important role in this evolution.

Common sense is closely tied to the history of materials and energy, a simple observation of a knitter can inspire innovation in an aircraft fuselage or a simple observation of a flame can inspire the innovation in a rocket booster.

The association of the materials and energy was originally only to provide facilities for daily use, to allow life on earth. The exploration and mastery of the infinitely small has led to a mastery of new products with unsuspected properties and wide potential in the field of energy. The last decades are more geared towards functionalities and environmental control, where leisure and recreation are the second most important necessities of life such as food and housing.

From the genius of Archimedes to the deception of the philosopher's stone or the last unlimited perpetual movement have been achieved by the use of materials and energy. From the imaginary projects of Jules Verne to the mathematical mastery of aeronautics by Von Karman, materials and energy have evolved between science, imagination and fiction.

The human being has always instinctively proceeded in the use of matter and energy to understand, use, store and control the use of materials and energy in their daily lives and perpetuate their species,

The scientist will observe, understand, quantify and predict while the engineer will find, transform, create and use. This gear has allowed molding the development of modern science creating a close link between disciplines such as Mathematics, Mechanics, Chemistry and Physics.

All this justifies the dedication of an international periodical edition to the topic of Materials and Energy (ICOME series).

The International Conference of Materials and Energy (ICOME) continues to travel around coastal cities and major basins of civilization: Tetouan-Martil (Moroccan coast), La Rochelle (French coast), Tianjin (Chinese side), San Sebastian (Spanish Basque coast).

The combination of wood and combustion played a vital role in meeting the needs of the societies up to the domination of the coal / steam and then the nuclear / electricity pair. Wood is experiencing a growing interest in the environment and Ecosustainable approaches.

The wood material is an important theme of the ICOME series. This goes from the field of construction and sustainable building until the design of eco-materials with low environmental impact to the recovery of waste and by-products to the synthesis of biomaterials and bioenergy. The edition also includes life cycle analysis and environmental cost estimates.

The biggest challenge regarding the constructability of buildings is the demand for energy, innovative systems for conditioning the atmosphere or the integration of renewable energy production in housing. The speakers include international specialists in the areas of renewable and alternative energy, energy in construction and structural sustainability, as well as physical-chemical processes for the transformation of wood, energy and biorefineries.

The series of Conferences on Materials and Energy is a promoter of the initiatives of young researchers, in the first place for the recognition and realization of the importance of the event and then for the training that takes place in it; In short, a thematic school that will benefit from the presence of international speakers as in previous editions. All these initiatives have allowed settling the foundations of the pyramid of knowledge allowing man to accelerate his progress towards progress. Innovation, the socio-economic cost, the difference of points of view, the ethics ... so much quality that accompany the scientist in his quest for truth.

In this sense, the wink to the universal scientist Averroes[1] through the award reinforces this vision of a man who puts the truth beyond the beliefs and allegiances of his time, the intelligence beyond the interest of use:

"There are vulgar conceptions quite sufficient for practical life; they must even be the food of men. They are not enough, however, for intelligence "

" The knowledge acquired in a foreign country can be a fatherland and ignorance can be an exile lived in one's own country. " Averroes.

The conference chairs thanks the international scientific committee, the operational technical committee and the high quality reviewing and helping on having high quality current technical content and also to explore new knowledge horizons on a variety of topics interconnected with fields of application in Materials and Energy.

Also the organizing committee and staff of the Universities for the preparation of this event are greatly acknowledged.

We hopes that everyone will found in this meeting an important topical interest, a great pleasure on exchanging with the both community of materials and energy and to enlarge the discussion towards architects, industrial and decisions makers in societies dreaming with the city of the future.

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

Prólogo ICOME'18

La extracción, la manipulación, la transformación y la conversión son palabras que pueden caracterizar los materiales y la energía. De hecho, su historia es un reflejo de la propia historia de la humanidad que evoluciona de manera íntimamente ligada al desarrollo que han experimentado los materiales y la energía a lo largo del tiempo.

Estos dos conceptos interrelacionados han evolucionado de manera complementaria entre el artesano y el ingeniero. Entre intentos y abstracción, este acoplamiento ha progresado rápidamente en un corto periodo de tiempo para apropiarse nuevos recursos de energía y ofrecer a la humanidad una dimensión insospechada de comodidad, movilidad y comunicación que influye desde los códigos sociales hasta la relación con la naturaleza. Con cada mutación, la sociología, los hábitos y los comportamientos se encuentran profundamente modificados.

La revolución industrial a través del binomio carbón / vapor impulsa el uso de materiales y fomenta las innovaciones técnicas que acompañadas de una intensa investigación en recursos energéticos han conseguido el desarrollo de la electricidad y la energía nuclear. Hoy en día, el uso de los combustibles fósiles representa más del 80% de la disponibilidad de los mismos, lo que exige una transición energética urgente que será posible gracias a la participación ciudadana en las orientaciones políticas. La búsqueda de un uso eficiente y racional de la energía se traslada a los campos del conocimiento y la investigación, siendo un tema de inquietud para el ciudadano en todo el mundo.

Por lo tanto, mediante diferentes vías de exploración ligadas a diferentes culturas, la abstracción se alcanza en diferentes escuelas de pensamiento y culturas que a primera vista parecen diametralmente opuestas. La cuenca mediterránea no se queda atrás y desempeñó un papel importante en esta evolución.

La exploración y el dominio de los materiales y la energía han llevado al desarrollo de nuevos productos con propiedades insospechadas y un gran potencial en el campo de la energía. Las últimas décadas están más orientadas hacia las funcionalidades y el control ambiental, donde el ocio y la distracción han sido relegadas a un segundo plano con respecto a necesidades más importantes de la vida, como la alimentación y la vivienda.

Del genio de Arquímedes al engaño de la piedra filosofal o al último movimiento perpetuo ilimitado han sido alcanzados por el uso de materiales y energía. Desde los proyectos imaginarios de Julio Verne hasta el dominio matemático de la aeronáutica por Von Karman, los materiales y la energía han evolucionado entre la ciencia, la imaginación y la ficción.

Dudar, usar y luego almacenar y controlar el uso para su vida diaria, su descendencia, y la supervivencia de su especie, el ser humano instintivamente siempre ha procedido así en materia y en energía.

El científico observará, comprenderá, cuantificará y predecirá mientras que el ingeniero encontrará, transformará, creará y usará. Este engranaje ha permitido moldear el desarrollo de la ciencia moderna creando un estrecho vínculo entre disciplinas como las Matemáticas, Mecánica, Química y Física.

Todo ello justifica que se le dedique una edición periódica internacional al tema de Materiales y Energía (serie de ICOME).

La Conferencia Internacional de Materiales y Energía (ICOME) sigue recorriendo ciudades costeras y las principales cuencas de la civilización: Tetuán-Martil (costa marroquí), La Rochelle (costa francesa), Tianjin (lado chino), San Sebastián (costa vasca española).

La pareja de madera/combustión desempeñó un papel fundamental en la satisfacción de las necesidades de las sociedades hasta la dominación del carbón / vapor para después dar paso al binomio energía nuclear / electricidad. La madera está experimentando un interés creciente para el medio ambiente dentro del enfoque de la Eco-responsabilidad.
La madera como material es un tema fundamental de la edición ICOME 2018 abarcando desde el campo de la construcción sostenible hasta el diseño de eco-materiales con bajo impacto ambiental pasando por la recuperación de residuos y subproductos para la síntesis de biomateriales y bioenergía. Asimismo, el análisis del ciclo de vida y las estimaciones de los costos ambientales, son aspectos que también se considerarán en esta edición del ICOME.
El mayor desafío en torno a la constructibilidad de los edificios lo constituyen las demandas de energía, los sistemas innovadores de acondicionamiento de la atmósfera ó la integración de la producción energía renovable en la vivienda. Entre los ponentes figuran especialistas internacionales en temas de energía renovable y alternativa, energía en la construcción y sostenibilidad estructural, así como procesos físico-químicos de transformación de la madera-energía y biorrefinerías.
La serie de Conferencias de Materiales y Energía pretende ser una cita promotora de las iniciativas de jóvenes investigadores, en primer lugar por el reconocimiento y la realización de la importancia del evento y luego por la formación que tiene lugar en el mismo; en definitiva, una escuela temática que se beneficiará de la presencia de oradores internacionales al igual que en ediciones anteriores. Todas estas iniciativas han permitido asentar las bases de la pirámide del conocimiento permitiendo al hombre acelerar su avance hacia el progreso. La innovación, el costo de desarrollo socio-económico, la diferencia de puntos de vista, la ética ... todos estos aspectos acompañan al científico en su búsqueda de las soluciones a los problemas planteados por la sociedad.

En este sentido, el guiño al científico universal Averroes a través del premio, refuerza esta visión de un hombre que pone la verdad más allá de las creencias y lealtades de su tiempo, la inteligencia más allá del interés de uso:

"Hay concepciones vulgares bastante suficientes para la vida práctica; éstas deben ser alimento de los hombres. Sin embargo, no son suficientes para la inteligencia "

"El conocimiento adquirido en un país extranjero puede ser una patria y la ignorancia puede ser un exilio vivido en su propio país". *Averroes.*

ICOME'18 ren Hitzaurre

Energia eta materialen arloan, erauzketa, manipulazioa, transformazioa eta konbertsioak, garrantzi handiko hitzak dira. Zibilizazioaren eboluzioa, materiala eta energia menderatzearekin elkar loturik egon da, non artisau eta ingeniariei esker kontzeptu hauek bilakaera garrantzitsua izan duten.

Gaur egun, kontzeptu hauek aurrerapen azkarra izan dute denbora gutxian, energia iturri berriak eta ingurugiroa ardatz dutelarik. Ikuspegi hauek, gaur egungo bizitzako erosotasunean, mugimenduan, komunikazioan, eta ingurumenarekiko erlazioan eragin zuzena dute.

Industria-iraultzak ikatz/lurruna bidez, materialen eta energiaren ildoan berrikuntza teknikoa bultzatu zuen. Energia-baliabideetako ikerketa garrantzitsuarekin batera, elektrizitate eta energia nuklearrera iritsi ziren. Orain arte, erregai fosilen %80 a erabiltzen da, beraz, energia iturri berrietara igarotzeko esfortzu handia egin behar da orientazio politikoetako parte-hartze herritarraren bidez. Arrazionaltasunaren eta eraginkortasunaren bilaketak, ezagutzaren eta praktikaren alorrak hartzen ditu eta energia gai garrantzitsua bihurtzen da mundu guztiko herritarrarentzat.

Beraz, kultura desberdinekin lotutako ikerketa-bide desberdinen bitartez, pentsamendu-eskola desberdinetan eta lehen begiratuan diametralki kontrakoak diruditen kulturetan, abstrakziora heltzen da. Arro mediterraneoa ez da atzean geratzen eta paper garrantzitsua jokatu du bilakaera honetan.

Infinituki txikia denaren ikerketak ezaugarri susmagabeak dituen produktu berrien garapena sustatu du. Azken hamarkadetako ikerkuntzak, funtzionaltasunerantz, elikadura, etxebizitza eta ingurumenarekiko ardurarantz bideratuagoak daude.

Arkimedes jeniotik hasi eta harri filosofalaren iruzurreraino, Von Karman-en aeronautikaren domeinu matematikoetatik Julio Vernes-en irudizko proiekturarte, material eta energien gaiak, zientziaren, irudimenaren eta fikzioaren artean eboluzionatu dute.

Zibilizazioak instintiboki erabili ditu materia eta energia, bai harrapatzeko, biltegiratzeko eta eguneroko bizitzan erabiltzeko. Zientzialariak ulertu, kuantifikatu, eta iragarri egingo du; Ingeniariak aldiz, eraldatu, aurkitu, sortu, eta erabili egingo du. Guzti honek, zientzia modernoaren garapena ekarri du eta diziplina matematiko, mekaniko, kimiko eta fisikoen arteko lotura bermatu du. Guzti honengatik, Material eta Energiako (ICOME) Nazioarteko Konferentziak bidaiatzen jarraitzea merezi du.

Hori dela eta, Material eta Energiako Nazioarteko Konferentziak (ICOME) itsasbazterreko hirietatik eta zibilizazioko arro nagusietatik bidaiatzen jarraitzen du: Tetuan-Martila (kostalde marokoarra), La Rochelle (frantziako kostaldea), Tianjin (alde txinatarra), Donostia (espainiako euskal kostaldea).

Egurraren ustiapenak eta errekuntzak, gizartearen beharrak asetu zituen ikatz/lurruna menderatu zen arte eta elektrizitatea/energia nuklearra erabiltzen hasi zen arte. Ingurumenarekiko ardurari esker, zurari buruzko interesak izugarrizko bultzada jasan du. Zura material moduan, ICOME konferentziaren barruan gai garrantzitsua da, eraikuntza iraunkorretatik hasi eta ingurumen-inpaktu baxuko eko-materialen diseinuraino, azpiprodukTuen errekuperazioa eta eko-material/bioenergien sintesira arte doan gaia delarik. Honez gain, bizitza-zikloaren analisia eta ingurune-kostuak ere kontuan hartzen ditu.

Kongresuko partaideen artean, energia berriztagarriko eta eraikuntzako energiako eta egituren jasangarritasuneko nazioarteko espezialistak daude. Horrez gain, zuraren transformazioko prozesu fisiko-kimikoak, energia eta biofindegien inguruko espezialistak ere badaude.

Material eta Energiako ICOME ekitaldia, ikertzaile gazteen ekimenean sustatzen da. Alde batetik, ekitaldiaren onarpena eta garapenaren garrantziagatik, eta bestalde, ekitaldi honetan eskaintzen den prestakuntzarengatik. Aurreko edizioetan bezala, ikastaro bat burutuko da nazioarteko hizlarien presentziarekin, non berrikuntza, kostu sozioekonomikoa, ikuspuntu-desberdintasunak, etika, etb., zientzialariei lagunduko dien piezak jorratuko diren.

Zentzu honetan, Averroes sariaren bidez, bere garaiko sinesteen gainetik egia jartzen duen pertsonaren ikuspegia sustatzen da, erabilera-interesetik adimena bultzatzen duena ere.

“Ikuskera arruntak nahikoak daude bizitza praktikorako; hauek ere gizonaren janaria izan behar dute. Hala ere, ez dira adimenerako nahikoak”.

"Atzerriko herrian lortutako ezagutza aberria izan daiteke. aldiz berezko herrian bizi izandako ezjakintasuna, erbestea izan daiteke". Averroes.

Profs. R. Bennacer & M. El Ganaoui

Profs. Labidi & Charrier El Bouhtoury Warm thanks for the Spanish and Basque translation

How to get to the conference

Travelling by Plane

There are three airports close to the city: Donostia - San Sebastián, Bilbao and Biarritz (France).

- **Bilbao Airport** (BIO): About 1 hour and 15 minutes drive from San Sebastián. A shuttle bus running every hour (or even every 30 mins in high season) connects Bilbao Airport and San Sebastián for about 17 € one way. The bus timetable is available at **www.pesa.net** (you need the connection: AEROPUERTO BILBAO ⇆ DONOSTIA-SAN SEBASTIAN). The airport is located in **Loiu**, a place near Bilbao. Note that the Basque name of the city, **"Donostia"**, is often used instead of "San Sebastian" on destination panels throughout the Basque Country.
- **San Sebastian Airport** (EAS): Situated in **Hondarribia** is about 20 minutes drive from San Sebastián. A small airport with domestic connections to Madrid and Barcelona, performed mainly by **Iberia**. A regular bus connects the airport and the city (timetable is available at **www.lurraldebus.eus**.) A taxi from the airport to the city center costs around 45 €.
- **Biarritz Airport** (BIQ): About 40 minutes drive from San Sebastián and on the french side of the Basque Country. Air France flies to this airport, as well as some low-cost airlines, such as Ryanair. Bus connections are available from this airport to San Sebastián (see **www.alsa.es**).

Travelling by Bus

The San Sebastián bus station has lines to cities throughout Spain. The main company traveling here is ALSA. For a complete list you can check the options available in the station's schedule.

The public transportation within the city and its suburbs can be looked up on the webpage of d-bus (Donostia-bus).

Travelling by Car

The city is connected to the rest of Spain by the N-1 (Madrid-Irun highway), AP-8 (Bilbao-Irun highway), and A-15 (Pamplona-San Sebastián highway).

ICOME Series Chairs ¨/ Local ICOME'18 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 (Paris-Saclay) since 2010. He becomes an Exceptional National Class Professor since 2017. He is also adjunced professor at Tianjin Uni. Of comm. (China) and UMB Univ. He assumed several responsibilities, director of the LEEVAM research team (2003-2007), Licence degrees (2008-2010), Aggregation title (2010-2011), Master research degree (2011 2013), Transfer and Environmental Research Unit (CNRS LMT-Lab) (since July 2012) and dean of Civil/Environmental department (Oct. 2012/Sep. 2016). 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 (Rank A)..

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 200 publications in journals (rank A) and participated in more than 100 international conferences including ten he co-organized. He is member of many international scientific societies in mechanics and heat transfers.

Local ICOME'18 Chairs

Dr 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.

Pr. 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.

Committees

International Scientific Committee

Abrudeanu M.	Acad. Sciences	Romania
Alexander J. I. D.	Case Western Reserve Univ	USA
A. Doufene	Massachusetts Institute of Technology	USA
Bayazitoglu Y.	Rice University	USA
Belarbi R.	University of La Rochelle	France
Bennacer R.	EcoleNomaleSutr. Cachan	France
Benim A. C.	University of Düsseldorf	Germany
Billon L.	University of Pau and PA	France
Bontoux P.	University of AixMarseille	France
Bouali M.	University of Mondragon	Spain
BouhadefKh.	University USTHB	Algeria
Cambra J.	University of the Basque Country	Spain
Chai J.	School of Comtruting and Eng.	UK
Charrier – El Bouhtoury F.	University of Pau and PA	France
Chrostowska A.	University of Pau and PA	France
Coronas A.	University Rovira I Virgili	Spain
Costa V.	University of Aveiro	Portugal
Cotta R.	Me Cotrtre UFRJ	Brazil
De Lemos M.	Inst. Tecno. De Aeronautica	Brazil
Dombrovsky L.	Inst. High Temtreratures	Russia
El Ganaoui M.	University of Lorraine	France
Gabsi S.	University of Sfax	Tunisia
Garcia A. M.	University of the Basque country	Spain
Inard C.	University of La Rochelle	France
Khatib J.	University of Wolverhamtrton	UK
Latrtra M.	University of Natroli	Italy
Labidi J.	University of the Basque country	Spain
Meyer JP.	University of Pretoria	South Africa
Mimet A.	Univ. Abd. Essaadi (UAE)	Morocco
Nandakumar K.	LouisianaState Univ.	USA
Nunzi J. M.	Queen'sUniversity	Canada
Sammouda H.	University of Sousse	Tunisia
Seghir Z.	RyersonUniversity	Canada
Vieira G.M.R.	CEFET/RJ	Brazil
Timchenko V.	University of NSW	Australia
Yuen R.	City University of Hong Kong	HK
Zhu Ji-Hong	NorthwesternPolytech. Univ	China

Organizing Committee

Erdocia X.	University of the Basque Country	Spain
Fernandes S.C.M.	University of Pau and PA	France
Garcia A.M.	University of the Basque Country	Spain
Gonzales Alriols M.	University of the Basque Country	Spain
Gullón P.	University of the Basque Country	Spain
Leonardi F.	University of Pau and PA	France
Llano-Ponte R.	University of the Basque Country	Spain
Morsli Souad	University de Lorraine	France
Rubatat L.	University of Pau and PA	France
El Abassi I.	EPMI	France
Brucker J.M.	EPMI	France

Technical and reviewing Committee

Available on the website

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

Keynote / Invited Lecturer / Mini-Symposium

Keynote Presentation

B-bem: Bayesian Building Energy Management (Key_N1)

Dr. Ruchi Choudhary, Associate Professor, Energy Efficient Cities Initiative, Engineering Department, University of Cambridge, United Kingdom

One of the greatest challenges facing the built environment is how to reduce energy consumption attributable to existing buildings. Energy management focuses on the day-to-day operation and the impact of operational decisions on energy consumption can be difficult to forecast.
The ambition of the B.bem project is to transform conventional energy analysis processes to support future energy management of existing non-domestic buildings – whether to assist in small-scale changes to building operations or deep energy retrofits. The aim is to quantify stochastic and operational uncertainties influencing building energy use, and to propagate those uncertainties through simulation models. B.bem is a 3 year project, which started in October 2014, funded by the UK Engineering and Physical Sciences Research Council (EPSRC) as part of the Energy Management in Non-domestic Buildings programme. This talk will present key outcomes of this project.

***BIOGRAPHY**: Dr Ruchi Choudhary specializes in simulation modelling of energy demand and environmental characteristics of urban built environments. Her research spans simulation-based methodologies for energy management of buildings; uncertainty quantification in building simulation models; and multi-disciplinary interactions influencing energy use in cities. Her recent research focuses on developing tools and methods for analysing energy consumption of large sets of buildings. These have resulted in two parallel investigations: one on how to simulate and visualize energy consumption in cities at high spatio-temporal resolution, and second, how to quantify uncertainties and stochasticity in model inputs by leveraging new types of data and computation. In addition, Dr. Choudhary is interested extending the use of building simulation models to investigate novel interactions with associated energy systems in cities. Her current projects include integration of food-production in the urban environment, analysis of underground transport systems as energy sources, and distributed energy networks.*

Materials for thermal energy storage (Key_N2)

Pr. Elena Palomo, CIC Energigune, Parque Tecnológico de Alava, Spain

This presentation provides a brief overview of materials for thermal energy storage (TES) applications, covering extensively studied materials as well as emerging ones. It focuses on materials with phase change below 200°C because the corresponding TES applications have greater market potential than those at higher temperatures. The fundamentals of materials for TES, their classification and the criteria generally adopted for selecting them are briefly recalled. Extensively investigated materials are shortly introduced, including a discussion about their respective advantages and drawbacks. Emerging materials offering attractive prospects for TES cost reduction

are presented as well. This encompasses new renewable-based materials, materials with high volumetric energy density values and solid-solid PCMs and reactive systems. An overview of composite materials developments directed to improve the materials performance or/and promoting their easy handling and integration into the applications is also given. The commercial status of TES materials and future development directions in the field are discussed last.

BIOGRAPHY: Professor Elena Palomo received his PhD on Applied Physics from the University of Complutense de Madrid in 1992. She has spent various research periods at the CIEMAT (Madrid, SP), as well as at the EcoleNationale des PontsetChaussés (Paris, FR) In 2001, she became Full Professor at Department of Physics of the University of Bordeaux. In 2017, she was appointed Scientific Director at the research center CIC-Energigune dependent on the Basque Government. Currently, CIC-Energigune is one of the European centers with the highest scientific productivity in the field of energy storage and with a clear orientation toward the impact on the competitiveness of the Basque industry.

Synthesis, properties and potential applications of cellular carbons and related materials (Key_N3) **Pr Alain Celzard,** Lorraine University (France)

In this keynote, cellular carbons and related materials will be considered. This kind of functional solids mainly consists in (more or less ordered) carbon foams, and in 3D periodic structures or dense packing of hollow carbon spheres, respectively. The synthesis of such materials will be first described. How the structure can be tuned will be explained, depending on the foreseen applications. Then, some examples of properties and applications will be given. A special focus will be given on energy and electromagnetic applications: thermal energy storage, electrochemical energy conversion, and manipulation of electromagnetic waves. Finally, perspectives for the near future will be suggested.

BIOGRAPHY: Alain Celzard graduated in chemical physics in 1992 and received his PhD in materials science in 1995 in Nancy (France). Since 2005 he is full professor at ENSTIB engineering school (Epinal). In 2010 he was appointed Junior member of the InstitutUniversitaire de France. At present he is heading one of the 4 scientific departments of Institut Jean Lamour (Université de Lorraine – CNRS), the largest lab dedicated to materials science in France. His scientific interests deal with disordered, porous and related materials, ranging from composites and nanoporous adsorbents to macroporous solid foams, with applications in catalysis, depollution, energy, electromagnetism, and gas storage. He co-authored around 270 publications, 20 book chapters and 7 patents.

Hybrid Computational-Analytical Methods in Energy Applications (Key_N4)

Prof. Renato M. Cotta Mech Eng. and Nanoengineering Depts., Federal Univ of Rio Janeiro, Brazil

This lecture reviews both hybrid numerical-analytical integral transforms and hybrid lumped-differential formulations for handling diffusion and convection-diffusion problems. Particular emphasis is given to recent developments that extend the applicability and the computational performance of these hybrid methodologies, towards more accurate, robust and less time-consuming simulations in comparison to purely numerical approaches, as applied to the ample fields of fluid flow and heat and mass transfer. The aim is to provide alternative solution paths that can be particularly relevant in computationally intensive tasks, such as in inverse problem analysis, optimization studies, and simulations under uncertainty, when the direct problem solution is usually required to be obtained for a large number of parametric variations. In this presentation, a few recently tackled problems in energy applications have been selected for illustration of the methodologies capabilities, including the thermal analysis of wet storage for spent nuclear fuel elements, the theoretical-experimental analysis of biodiesel synthesis in micro-reactors, and the simulation of membrane-less redox flow batteries.

BIOGRAPHY: BSc on Mechanical/Nuclear Engineering, Federal University of Rio de Janeiro (UFRJ), Brazil, 1981, and Ph.D. in Mechanical & Aerospace Engineering, North Carolina State University (NCSU), USA, 1985. Author of around 500 technical papers, 9 books, and supervisor of more than 80 PhD and MSc thesis. Member of the National Order of Scientific Merit, Brazil, 2009. Member of the Brazilian Academy of Sciences (ABC), 2009, National Engineering Academy (ANE), Brazil, 2011, and the World Academy of Sciences (TWAS), Trieste, Italy, 2012. Chairman, Executive Committee, Int. Center for Heat & Mass Transfer, ICHMT. President of the National Commission of Nuclear Energy, CNEN/Brazil, 2015-2017. Senior Consultant, Directorate General for Nuclear Development and Technology, Brazilian Navy. Presently, Visiting Professorship (Leverhulme Trust Fund) at the Mechanical Eng. Dept., University College London, UK.

Perovskitic materials for thermochemical energy storage (Key_N5)

Pedro L. Arias, Dpt. of Chemical and Environmental Eng., Univ. of the Basque Country, Spain

Energy storage with facile grid integration is imperative as the energy mix becomes more diversified. This is especially true for integrating renewables, where intermittent, diurnal, and/or unpredictable energy generation may not coincide with energy demands. Energy storage is also a proven element to reach a sustainable and efficient management of any thermally driven process. The inherent thermodynamic limitations associated to a thermal system, such as the unavailability of an appropriate heat source, thermal losses or improvable cycle efficiencies, justify the implementation of a TES solution. This storage can be fulfilled using reaction cycles where energy is stored in the endothermic step and released in the exothermic one. If thermal energy is available at high temperatures (as in some chemical or metallurgical processes), it can be used to thermally reduce special materials such as perovskites. Their further oxidation using steam generates hydrogen which

is the energy vector associated to fuel cells. In this lecture after a general presentation about the use of perovskitic materials for thermochemical energy storage applications, some new results about LaSrCoX mixed oxides (where X= Fe, Ni, Mn or Cr) will be presented and discussed. The objectives are to develop: a) more stable materials when submitted to many thermal cycles, b) materials able to suffer reduction at temperatures as low as possible and c) materials with a maximum reduction degree (δ, from ABO3 to ABO3-δ).

Solid characterization techniques (BET, XRD,..) and thermal tests (TGA, DSC) will allow comparing the different formulations and provide insights for further developments.

BIOGRAPHY: Pedro L. Arias holds a PhD from the University of the Basque Country since 1984. After postdoctoral work at the Imperial College of Science, Technology and Medicine (London, UK) and the Massachusetts Institute of Technology (Cambridge, US) he became Associate Professor at the Faculty of Engineering in Bilbao (1986-1990) where he has been since 1990 Professor and since 2013 Head of the Department of Chemical and Environmental Engineering. He leads the Sustainable Process Engineering Research Group dedicated to areas such as catalysts science and technology, sustainable process engineering and industrial waste recycling. He has published more than 140 research papers and supervised 20 PhD thesis.

Nanotomography and High Performance Computing: towards unprecedented predictions in materials and energy (Key_N6)

Professor Patrick Perré, CentraleSupélec, Université Paris-Saclay, laboratory LGPM

This conference is devoted to impressive progresses in material sciences and energy allowed by 3D imaging and High Performance Computing (HPC). High resolution 3D imaging is nowadays part of the laboratory equipment: confocal microscopes are usual lab tools and nano-tomography with sub-micrometric resolution starts to be available in some labs. Similarly, the mushrooming power of computers continues to move the frontiers of simulation.Upscaling methods, such as homogenization or volume averaging, allowed a well-established set of macroscopic equations in heterogeneous media to be obtained. This approach is powerful but needs to be supplied by relevant effective parameters. Nowadays, thanks to the spectacular progresses in 3D imaging and computational tools, these effective parameters can be obtained by 3D calculations on real pore morphologies. Recent examples will be presented to predict properties of bio-based building materials. 3D imaging and HPC are also complementary tools to simulate processes involving coupled transfer in reactive or bioactive media. Some examples of such processes will be proposed in the second part of the conference.
The final part of the talk will be devoted to advances in formulation that remain needed to effectively take advantage of these two impressive tools (nanotomography and HPC). For example, new insights in fractional operators will be presented briefly.

BIOGRAPHY: A graduate of the prestigious "Ecole Polytechnique", Patrick Perré achieved full professorship at the renowned Forestry Engineering College at Nancy, France (which merges with AgroParisTech in 2007), at the age of 41. Physicist with an intended balance between modelling and experiment, he combines a world-class

scientific approach with a penetrating understanding of the practical, technological implications of his work. He is mainly involved in coupled transfer in reactive or bio-active media, with applications to bio-materials, bio-energy and modelling of bio-processes. In 2010, he moved to CentraleSupélec (former Ecole Centrale Paris) as head of the Laboratory of Chemical Engineering and Materials, a group of ca. 65 people, where he already instilled a strong activity in the use of renewable resources, namely using vegetal plants to produce materials, energy or high-valued molecules thanks to biotechnologies.

Patrick cumulates more than 160 papers in peer-review journals, 3 patents and more than 30 keynote addresses at international conferences (h-factor of 28, WoS and 37, Google Scholar). He received 3 international awards and has numerous international collaborations, notably in Brazil, Australia, Quebec and Tunisia. He is an expert in several professional organizations.

Analysis on Factors Affecting the Performance of PV Panels (Key_N7)

Dr. Eric Lee, Department of Architecture and Civil Engineering, City University of Hong Kong

We explore different methods to analyze large and complex datasets related to building integrated photovoltaics (BIPV). Using data from the European RESSOURCES project from the ETNA/B full-scale experimental setups. We show classic data mining methods such as mutual information can be used to better understand the physics behind BIPV systems and highlight discrepancies between different setups. We also use neural networks to model the airflow inside the double-skin facade and quantify its contribution to the buildings cooling and heating.

BIOGRAPHY: Dr. Eric Lee received his PhD from the City University of Hong Kong. He is currently an associate professor and the assistant head of architectural engineering in Department of Architecture and Civil Engineering, City University of Hong Kong. His major research areas include building energy analysis and modelling of building systems. He has over 100 articles published in different referred journals and conference proceedings. Dr. Lee is also serving different technical committees of different departments of the Hong Kong SAR Government.

The steam explosion process: a versatile pretreatment for a selective deconstruction of the lignocellulosic biomass (Key_N8), **Nicolas Brosse**, LERMAB, Lorraine University, France

Steam explosion (SE) is currently one of the most valuable and cost effective pretreatment technologies for cellulosic bioethanol production. After impregnation, biomass is treated with hot steam (around 200°C) under pressure (around 1.5-3 MPa) during few minutes followed by an explosive decompression. The effect of SE on biomass combines a chemical hydrolysis during the stream treatment and defibration during the explosive decompression to make the cellulose more amenable to enzymes. This technology is currently developped at the commercial scale (continuous processes) in Italy (beta renewables) and in the USA (Abengoa) for biofuel production from lignocellulosic feedstocks. In this lecturer we will demonstate that beyong bioethanol, steam explosion could be considered as a versatile technology for lignocellulosics deconstruction for different advanced applications. The examples given include current on-going works from our group: • the production of fine hemp fibers (cottonisation of hemp) for textile applications: the optimization of

elementary water- or NaOH-impregnated hemp fibers extraction using SE is described. An original quantification method was developed in order to follow the defibration rate by image processing. Defibration was evaluated and optimized using systematical experimental method for the production of superior quality fibers with a low variability. • the pretreatment by SE of phytoremediation lignocellulosic feedstocks (heavy metals contaminated) for the production of bioethanol and fibrous materials. The influence of the severity of the SE process on the composition in metals of the fibrous cellulosic residues was examined. The residual metal effect on the enzymatic hydrolysis of cellulose into glucose and on the fermentation step was also investigated. • The extraction of biopolymers from biomass in control conditions. SE appeared to be a selective and non desctructive method for the extraction and solubilisation of high molecular mass biopolymers (hemicelluloses, proteins, lignin).

BIOGRAPHY: Nicolas Brosse is professor in Lorraine University (France) since 2006 and is a research group leader in LERMAB (laboratory dedicated to wood material). He is an organic chemist with experience in multiple areas of organic synthesis, characterization of organic compounds and solid phase synthesis. His current interests include ligniocellulosics pretreatment and deconstruction, polyphenolics characterizations and utilizations. He had published more than 100 research articles in international peer-reviewed journal.

Atomistic molecular modelling and simulation for prediction transport diffusion coefficients of liquid mixtures (Key_N9), **Pr. AdranVrabec**, Germany

Liquids appearing in nature and industrial applications are essentially multicomponent. However, only data on binary diffusion coefficients are relatively abundant because higher order mixtures are significantly more complex. Molecular modeling and simulation offers a promising route for predicting transport diffusion coefficients and for understanding the underlying phenomena on a microscopic basis. Equilibrium molecular dynamics simulations and the Green-Kubo formalism can be used to predict Onsager and Maxwell-Stefan diffusion coefficients. Subsequently, the thermodynamic factor has to be used to transform these data to Fick diffusion coefficients. An overview on the process from devising molecular interaction models employing quantum chemical data to the prediction of Fick diffusion coefficients of multi-component liquid mixtures by atomistic means is given.

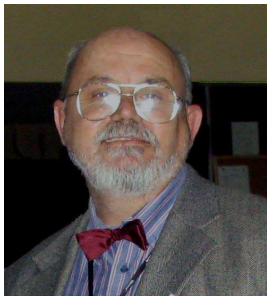
BIOGRAPHY: *JadranVrabec is full professor for Thermodynamics and Energy technology at the University of Paderborn, Germany since 2009. His work is situated around molecular modeling and simulation for process and energy engineering applications. After studying process engineering at the Ruhr-University of Bochum, he also accepted his PhD there in 1996. Subsequent to an interim phase working as a management consultant, he became a group leader for molecular thermodynamics at the University of Stuttgart, where he received his habilitation in 2007. Vrabec has co-authored almost 200 peer-reviewed research papers, most of which discuss different aspects of atomistic molecular modeling and simulation methods. He has a strong interest in high-performance computing and the according development of simulation software. Together with his co-authors, he carried out molecular dynamics simulations for the largest system that was described on the*

atomistic scale. Vrabec is active in different German and European working parties for thermodynamics and molecular simulation.

Approximate solutions to nonlinear heat and mass diffusion engineering models: Improved integral-balance approach (Key_N10)

Pr. Jordan Hristov, Dpt of Chemical Engineering Univ. of Chem. Tech. and Metallurgy, Bulgaria

The lecture presents the physical basis and the mathematical approach to solve nonlinear diffusion of heat and mass in new materials exhibition nonlinear transport properties by integral-0balance technique. The special cases discussed are: 1) Transient nonlinear heat (mass) diffusion equation with power-law nonlinearity of the thermal (mass) diffusivity; 2) Transient heat conduction with linearly temperature-dependent thermal diffusivity; 3) Transient diffusion with exponentially dependent on the concentration diffusivity emerging in polymers and concretes. 4) Thermal grooving of metals; 5; Heat radiation diffusion models, etc. The integral-balance method leads to closed form solutions based on the single and double-integration technique and a new approach to the nonlinear spatial derivative avoiding the commonly used linearization by the Kirchhoff transformation.



BIOGRAPHY: Jordan Hristov is a professor of Chemical Engineering at the University of Chemical Technology and Metallurgy, Sofia, Bulgaria. He was graduated in 1979 as Electrical Engineer (MS equivalent) at the Technical University, Sofia, Bulgaria. His PhD thesis on the magnetically assisted fluidization was awarded by the University of Chemical Technology and Metallurgy in 1995. Prof. Hristov's research interests cover the areas of particulate solids mechanics, fluidisation, heat and mass transfer with special emphasis on scaling and approximate solutions of nonlinear problems. Relevant information is available at http://hristov.com/jordan

Mini Symposium Hydrogen –Energy mix organizers

Prof. Dr. José F. Cambra, Catedrático de Ingeniería Química
Escuela de Ingeniería de Bilbao

Dr. Angel SCIPIONI, Université de Lorraine

Invited Lecturer

Dimitri BIGOT , Université de la Réunion

Title: Biobased materials as a solution to reach thermal comfort and to limit moisture implications in buildings in La Reunion Island

Herie PARK, Yeungnam University, Korea.

Title: Flexibility of home energy management with thermal response of buildings

Alexeandre DARCHERIF, Akamai-Technologies, Paris

Title: Deployment of electric vehicle charging infrastructure. Application to madrid city

Smaine KOUIDRI, Université de Paris Saclay

Title: Assessment of the jet pump impact on thermoacoutic prime mover operation

Eulogio CASTRO ; University of Jaen

Title: Valorization of olive pomace fly ash in sustainable cement blocks. Influence of the washing pretreatment of ash

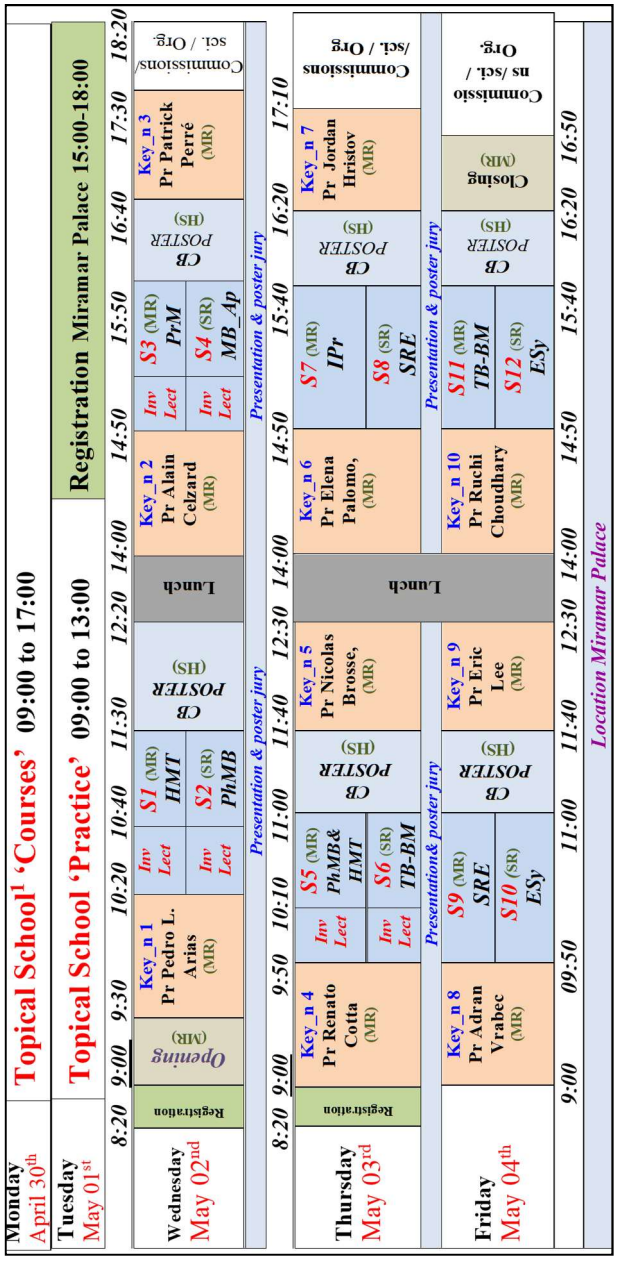
Maria Teresa MOREIRA, University of Santiago de Compostela

Title: Environmental sustainability assessment of biorefinery production chains from lignocellulosic biomass

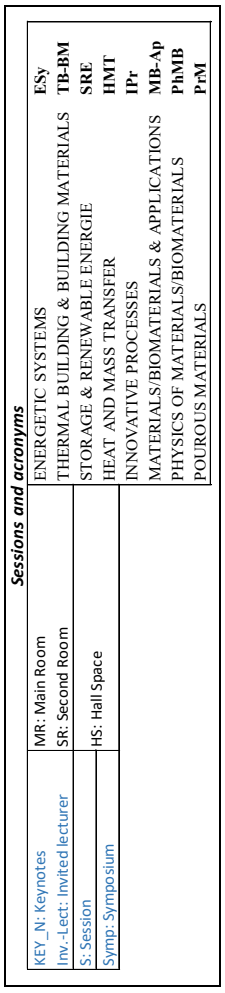
Vanesa GIL HERNÁNDEZ
Senior Researcher at Foundation for the Development of the Hydrogen Technologies in Aragon (FHa).
Mini Symposium Hydrogen –Energy mix

Conference Program

Overview



Sessions and acronyms



Conference Program details

Monday April 30th and Tuesday May 01st

Monday, April 30th	09:00	Topical School "courses" 09:00 to 17:00
	17:00	

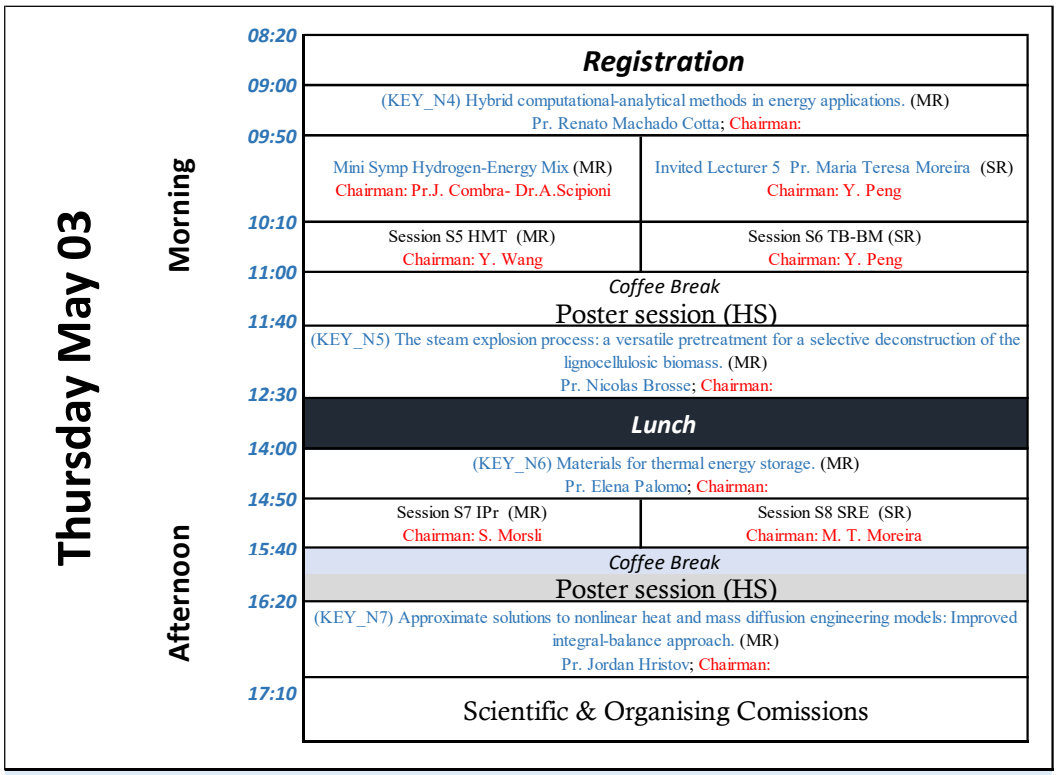
Tuesday, May 1st	09:00	Topical School "practice" 09:00 to 13:00
	13:00	
	15:00	***Registration Miramar Palace***
	18:00	

Wednesday May 02nd

Wednesday May 02

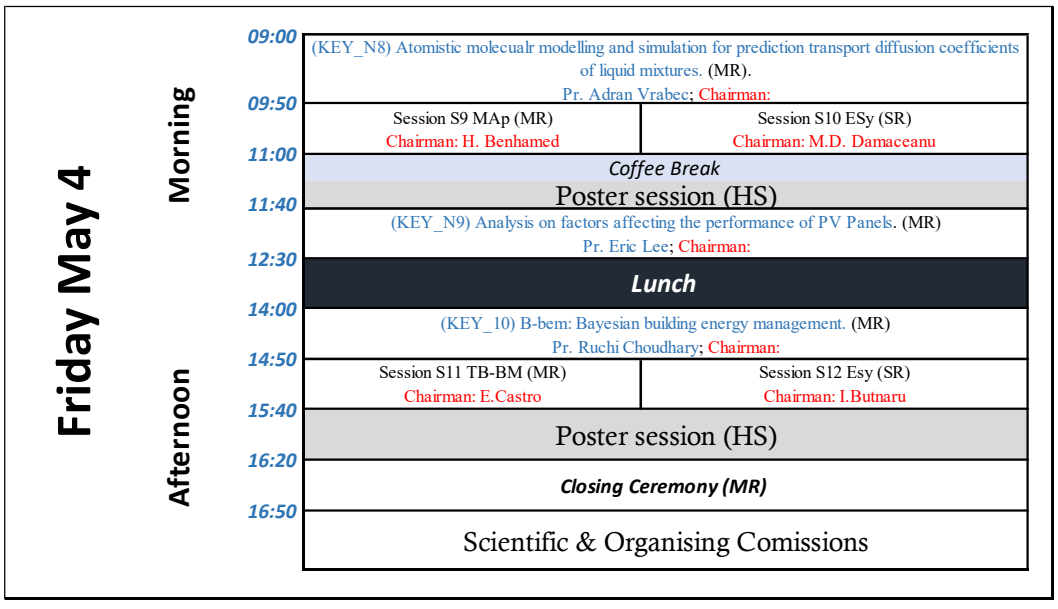
	08:20	***Registration***	
	09:00	***Opening Ceremony (MR)***	
Morning	09:20	(KEY_N1) Perovskitic materials for thermochemical energy storage. (MR) Pr. Pedro L. Arias; Chairman:	
	10:20	Invited Lecturer 1 Dr.Darchcerif Alexandre (MR) Chairman: G. Vieira	Invited Lecturer 2 Pr. Eulogio Castro (SR) Chairman: B. Liu
	10:40	Session S1 PhM (MR) Chairman: G. Vieira	Session S2 PhM (SR) Chairman: B. Liu
	11:30	*Coffee Break*	
		Poster session (HS)	
	12:20	***Lunch***	
	14:00	(KEY_N2) Synthesis, properties and potential applications of cellular carbons and related materials. (MR) Pr. Alain Celzard; Chairman:	
Afternoon	14:50	Invited Lecturer 3 Pr. Smaine Kouidri (MR) Chairman: M. Siroux	Invited Lecturer 4 Dr. Herie Park (SR) Chairman: A. Kheiri
	15:10	Session S1 HMT (MR) Chairman: M. Siroux	Session S2 PhM (SR) Chairman: A. Kheiri
	15:50	*Coffee Break*	
		Poster session (HS)	
	16:40	(KEY_N3) Nanotomography & High Performance Computing: towards unprecedented predictions in materials & energy. (MR) Pr. Patrick Perré; Chairman:	
	17:30	Scientific & Organising Comissions	
	18:20		

Thursday May 03rd



19:30 Banquet Dinner

Friday May 04th



Find your session number and acronym by communication ID

Explanation: Using your ID number you identify the corresponding session. Next table to section to find the details on your session and the timetable (your scheduled ID time presentation).

ID	Session Number
2	S10
3	S5-S6
5	S10
6	S6
7	S6
9	S3-S4
10	S4
13	S4
15	S2
17	S11
19	S3-S4
22	S1
23	S2
25	S3
26	S3
31	S2
32	S5
33	S10

ID	Session Number
34	S6
35	S7_S8
36	S5
37	S5
38	S1
39	S3
44	S5
45	S3
48	S7
49	S11
50	S7
51	S3
52	S2
53	S1
54	S11
101	S12
102	S8
103	S12

ID	Session Number
104	S7
105	S6
106	S2
107	S10
108	S9
114	S12
116	S7
119	S6
120	S12
122	S10
124	S2
125	S4
126	S10
127	S8
128	S9-s10
130	S4
131	S9
133	S4B

ID	Session Number
134	S9
137	S5
138	S5
139	S10
141	S1
143	S4
144	S7
145	S9
146	S4B
148	S11
149	S8
152	S3
153	S12
154	S7
155	S10
157	S8
158	S3
159	S3_S4

ID	Session Number
160	S11-S12
162	S7
164	S10
166	S9
168	S6
169	S4
204	S6
205	S11
206	S8
207	S8
208	S11
209	S10
210	S12
212	S5
214	S2
215	S5
217	S5
218	S3

ID	Session Number
219	S7
220	S5
221	S9
222	S7_S8
223	S4B
225	S12
226	S11
227	S12
228	S10
229	S2
230	S6
232	S11
236	S7
237	S6
238	S7
239	S1
240	S8
241	S6

ID	Session Number
242	S8
245	S1_S2
246	S9
251	S8
252	S11
253	S5
254	S6
255	S11
256	S3
260	S7
261	S10
262	S2
265	S5
266	S2
268	S12
269	S12
271	S9
273	S10

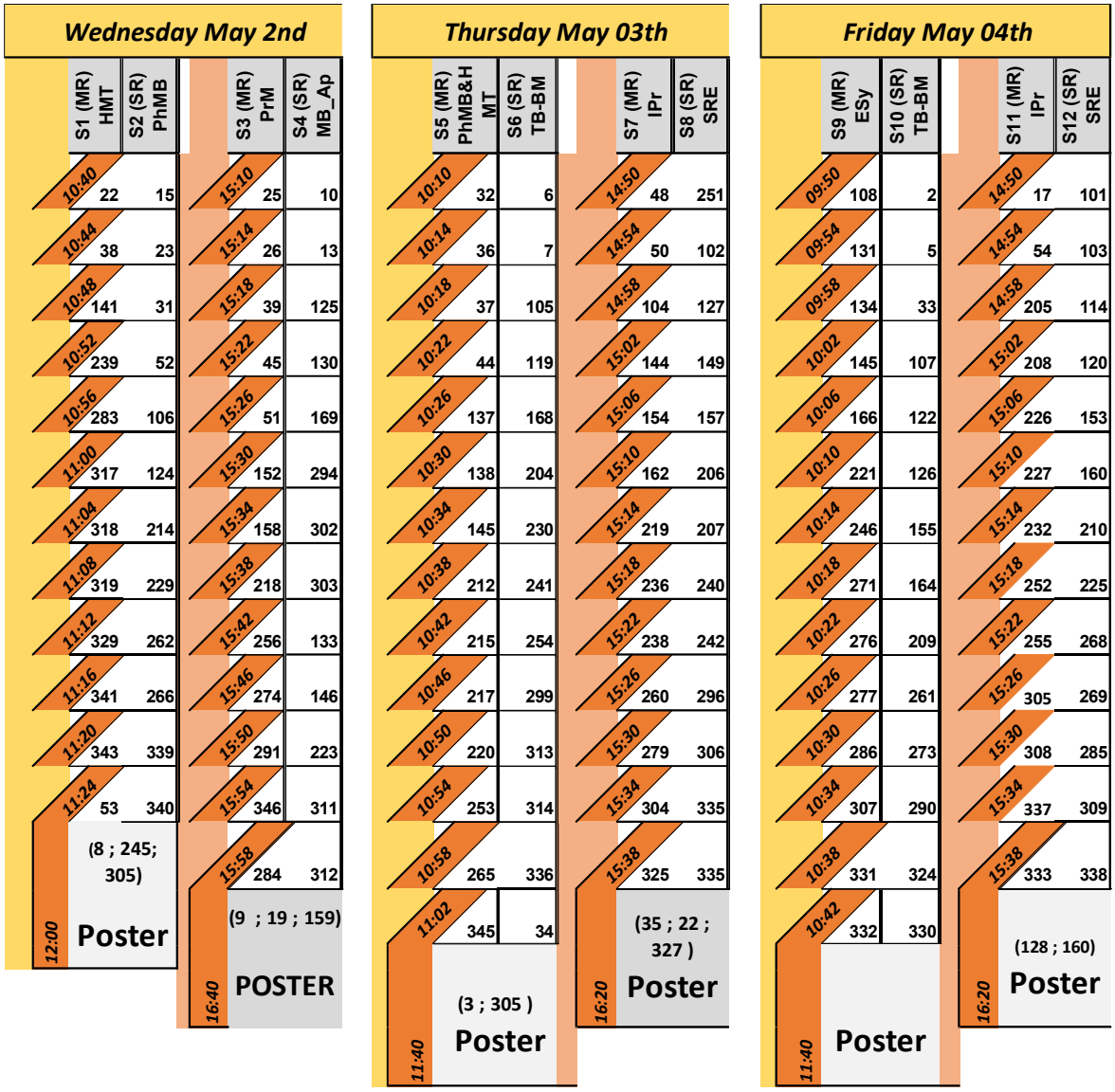
ID	Session Number
274	S3
276	S9
277	S9
279	S7
283	S1
284	S3
285	S12
286	S9
290	S10
291	S3
294	S4
296	S8
299	S6
302	S4
303	S4
304	S7
305	S5
306	S8

ID	Session Number
307	S9
308	S11
309	S12
311	S4B
312	S4B
313	S6
314	S6
317	S1
318	S1
319	S1
324	S10
325	S7
327	S7-S8
329	S1
330	S10
331	S9
332	S9
333	S11

ID	Session Number
334	S5
335	S8
336	S6
337	S11
338	S12
339	S2
340	S2
341	S1
343	S1
345	S5
346	S3

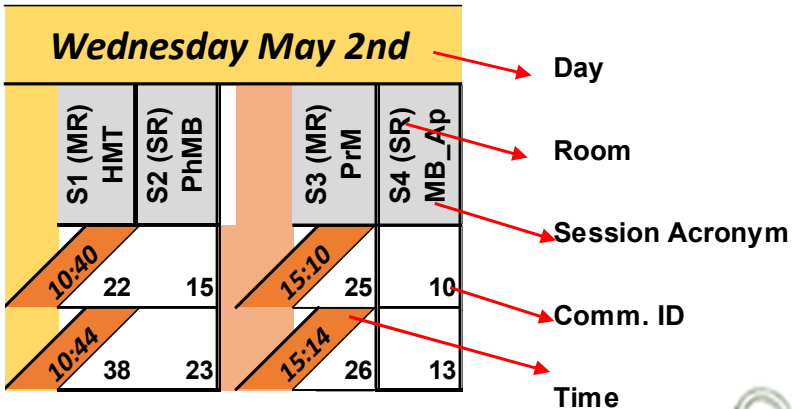
Find the scheduled time for your ID number from session

Explanation: you previously identify the session including your ID communication. Your scheduled ID time presentation are given below (ID-timetable per session).



List of Sessions/Contributions per session

Explanation ➔



Conference Program

Wednesday May 2nd Morning (S1 and S2)

Time	ID	Title and Authors	S1: HEAT AND MASS TRANSFER (Main Room)
10:40	22	Microencapsulated ionic liquid as active thermal material in heat trasfer fluids, by Nerea Uranga, Marta Hernaiz and Mª Carmen Marquez.	
10:44	38	Progress on numerical simulation of nanofluids: impact of an isothermal spherical partition on the mixed convection of nanofluids within cubic enclosures, by Abdelkader Boutra, Karim Ragui, Nabila Labsi, Y. Khaled Benkahla and Rachid Bennacer	
10:48	141	Heat transfer characteristics of a temperature-dependent carreau fluid flow within a circular pipe by taking into account viscous dissipation, by Nabila Labsi, Rafik Melki, Youb Khaled Benkahla and Abdelkader Boutra	
10:52	239	Analysis of microstructure and solute transfer in fruits and vegetables under microwave drying, by Gu Sizhong, Liu Bin and Yang Zhaodan	
10:56	283	Multiphase flow modeling for cbrn applications, by Yoshiyuki Nishio, Bart Janssens, Karim Limam and Jeroen van Beeck.	
11:00	317	Three-dimensional numerical simulation of a turbulent flow around an obstacle., by Benahmed Lamia and Aliane Khaled and SARI HASSOUN Zakaria	
11:04	318	enhancement of thermal exchanges in natural convection assisted by ultrasound, by Hamadouche Abdelmalek, Rachid Nebbali and Smaine Kouidri.	
11:08	319	Linear stability analysis of poiseuille-rayleigh-bénard flow in horizontal channel filled with nanofluids, by Lahcen Bammou, Khalid Souhar, Samy Alami and M'barek Feddaoui.	
11:12	329	Optimization of the operating time of a heat exhanger: thermo-economic criterion, by Sandra Djimi, Abdelhamid Kheiri and Jean Mathurin Nzikou.	
11:16	341	Spatial evolution and stability of longitudinal rolls in poiseuille-rayleigh-bénard mixed convection, by Cherifa Abid, Zoubida Haddad and Rani Taher	
11:20	343	Computational characterization of a gurney flap on a du91(2)w250 airfoil, by Gorka Roncero Fontaneda, Pablo Saenz Checa, Unai Fernandez, Inigo Errasti, Ekaitz Zulueta, Jose Manuel Lopez-Guede and Javier Sancho.	
11:24	53	Effects of cantilever beam configurations on the energy harvesting performance of cross-flow turbine, by Hyeon-Jae Noh, Cheng Tang and Youn-Jea Kim	

Time	ID	Title and Authors	S2: PHYSICS OF MATERIALS/BIOMATERIALS
10:40	15	Effect of the blending ratio on the thermal behavior of biomass blends of coffee skins and eucalyptus chips, by Maria Gonzalez Alriols, Itziar EgÜes Artola and M. Mirari Antxustegi	
10:44	23	Bio-sourced hybrid phenolic fireproofing resins for novel applications, by Pedro Luis de Hoyos Martinez, Jalel Labidi and Fatima Charrier-El Bouhtoury.	
10:48	31	Heat transfer analysis of nanofluid flow through backward facing step, by Boudiaf Ahlem, Danane Fetta, Benkahla Youb Khaled, Berabou Walid, Benzema Mahdi and Ouyahia Seif-Eddine	
10:52	52	Characteristics of liquid-solid flows in single-channel pump, by Cheng Tang, Hyeon-Jae Noh and Youn-Jea Kim	
10:56	106	Effects of wood drying process on physico-chemical properties of resin in pinus pinaster, by Nesrine Harfouche, Thomas Cabaret and Bertrand Charrier	
11:00	124	Study of the development of an industrial varnish with rosin and vegetal oil, by Manon Frances and Bertrand Charrier	
11:04	214	Mechanical, physical and thermal properties of extruded clay bricks reinforced by date palm fibers following the same industrial production steps., by Mohammed Laid Bakhaled, Mohamed Bentchikou and Rafik Belarbi.	
11:08	229	Protective plasma sprayed coating for thermo-sensitive substrate, by Soufiane Oukach, Hassan Hamdi, Mohammed El Ganaoui and Bernard Pateyron	
11:12	262	Correlation between dielectric analysis and monocell performance for photocrosslinked and post-sulfonated sebs-based membranes, by Roberto Teruel-Juanes, Carmen Del Rio and Amparo Ribes-Greus	
11:16	266	Non resonant raman spectra of individual dimers of single-walled carbon nanotubes, by Abdelhai Rahmani, Mourad Boutahir, Hassane Chadli and Abdelali Rahmani	
11:20	339	Mechanical and thermal characterization of compact blocks in bar ground with wood ash addition, by Gbénondé Milohin, Victor Gbaguidi, André Donnot, Malahimi Anjorin and Riad Benelmir	
11:24	340	Xylomat: an expertise in bio-sourced materials for research and industry, by Léo Leroyer and Bertrand Charrier.	

Wednesday May 2nd - Afternoon (S3 and S4)

Time	ID	Title and Authors	
15:10	25	Determination of transient fluid temperature and thermal stresses in pressure thick-walled elements using a new design thermometer, by Magdalena Jaremkiewicz, Piotr Dzierwa, Dawid Taler and Jan Taler.	S3: POUROUS MATERIALS
15:14	26	Toward a water vapor adsorption and retention models for building porous materials from pore size distribution, by Abdelkrim Trabelsi, Zakaria Slimani, Akli Younsi, Joseph Virgone and Rafik Belarbi.	
15:18	39	Experimental and numerical study on moisture tranport in unsaturated porous medium, by Xiaoyan Ma, Rachid Bennacer, Farid Benboudjema and Georges Nahas	
15:22	45	Biobased foams for insulating applications, by Hamed Issaoui and Fatima Charrier - El Bouhtoury	
15:26	51	Numerical study of heat and mass transfer during the evaporative drying of porous media, by Karima Sellami, Nabila Labsi, Mbarek Feddaoui, Benkahla Youb Khaled and M'Hand Oubella	
15:30	152	Duability of construction materials based-vegetable particles (rapeseed straw) subjected to wetting and drying cycles, by Daher Suzanne, Benazzouk Amar, Zerrouki Redouane, Chargui Skander, Langlet Thierry and Beji Hassen	
15:34	158	Sensitivity analysis of a solar trigeneration system integrated an organic absorption/compression cycle, by Rabeb Tougeni, Dorra Lounissi and Nahla Bouaziz	
15:38	218	Free convection generated by the active base of a hemispherical cavity, with and without nanofluid saturated porous media, by Abderrahmane Baïri, Alexander Martín-Garín, Najib Laraqi, Kemi Adeyeye, Nacim Alilat, José Antonio Millán-García and Luis Roseiro	
15:42	256	Effect of inclination and darcy number on bifurcations and thermal transfer in a porous cavity, by Sabiha Aklouche, Saad Adjal and Belkacem Zeghmati	
15:46	274	Hybrid liquid desiccant system design and simulation using licl-h2o solution in a demo site in taiwan, by Xabier Peña, Laura Alonso, Andoni Diaz de Mendibil and Asier Martinez	
15:50	291	flow and heat transfer in anisotropic active foam porous media wall, by Rafael C. Deptulski, Rachid Bennacer and Gisele M. R. Vieira	
15:54	346	Experimental study on blood perfusion rate and numerical simulation of heat transfer process in skin tissue during hyperthermia, by Wang Yabo,Zhu Kai	
15:58	284	Thermochemical properties of ettringite for energy storage, by Bao Chen, Frédéric Kuznik, Matthieu Horgnies, Kévyn Johannes, Vincent Morin and Edouard Gengembre	

Time	ID	Title and Authors	
15:10	10	Preparation and performance measurement of paraffin-stearic acid/expanded graphite heat storage material, by Zou Tonghua, Chang Yafei and Liu Nan	S4: MATERIALS/BIOMATERIALS & APPLICATIONS
15:14	13	Numerical investigation of the eddy-viscosity models ability to predict heat transfer within the dry storage for nuclear waste, by Amel Remmache, Amina Sabeur and Yacine Addad	
15:18	125	Valorization of mahogany wood industrial by products, by Arsène Bikoro Bi Athomo, Starlin Peguy Engozogho Anris, Rodrigue Safou-Tchiama, Florent Eyma and Bertrand Charrier.	
15:22	130	bioinspired and marine-based materials for a sustainable future, by Sujit Kootala and Susana Fernandes	
15:26	169	Valorization of olive pomace fly ash in sustainable cement blocks. Influence of the washing pretreatment of ASH, by María Dolores Eliche-Quesada, María Del Carmen Estepa-Esquinas, Alejandro Ferro-Catalán, Luis Pérez-Villarejo and Eulogio Castro	
15:30	294	First usage of fungal extract as a composite material in chitosan film with inclusive characterizations, by Behlul Koc, Lalehan Akyuz, Yavuz Selim Cakmak, Idris Sargin, Asier M. Salaberria, Jalel Labidi, Sedef Ilk, Fazilet Ozlem Cekic, Ilgaz Akata and Murat Kaya.	
15:34	302	Thin polyimide films: a compative study, by Irina Butnaru and Maria Bruma.	
15:38	303	Obtaining of new materials from polyurethane waste recycling, by Tamara Calvo-Correas, Lorena Ugarte, Cristina Peña-Rodríguez, Maria Angeles Corcuera and Arantxa Eceiza.	
15:42	133	Extraction and characterization of okoume (aucoumea klaineana pierre) extractives, by Starlin Peguy Engozogho Anris, Arsene Bikoro Bi Athomo, Marcia Vidal, Louis Denaud, Rodrigue Safou-Tchiama and Bertrand Charrier	
15:46	146	Energy efficient building envelope using pet in concrete., by Gitanjali Thakur, Muhammad Aslam and Mohammed Elganaoui	
15:50	223	Comparison between injection moulding and 3d printer based on life-cycle assesment parameter, by Xabier Guridi, Ana Boyano, Unai Fernandez-Gamiz and Ortzi Akizu.	
15:54	311	Synthesis of solvent-free waterborne poly(urethane-urea) based on biocompatible and bio-based polyols, by Iñigo Díez-García, Arantzazu Santamaría-Echart, Arantxa Eceiza and Agnieszka Tercjak.	
15:58	312	Reinforcement of a waterborne polyurethane matrix with carboxylated cellulose nanofibers and the effect of the carboxylation degree, by Izaskun Larraza, Julen Vadillo, Oihane Echeverria, Alvaro Tejado, Maider Azpeitia, Eneritz Vesga, Ander Orue, Aitor Arbelaiz and Arantxa Eceiza.	

Thursday May 03th - Morning (S5 and S6)

Time	ID	Title and Authors	
10:10	32	Mesoscopic analysis of natural convection flow of alumina water nanofluid in a cavity of bridgman configuration, by Benameur Bouamoud, Samir Houat and Mohammed El Ganaoui	S5: PHYSICS OF MATERIALS/BIOMATERIALS - HEAT & MASS TRANSFER
10:14	36	Numerical simulations of convective melt flow driven by the combined effects of buoyancy, surface tension, and magnetic body forces by using two conceptual different models, by Farid Mechighel, Sadik Dost and Mohammed El Ganaoui	
10:18	37	Progress on numerical simulation of irregular annulus: the critical thermal buoyancy and annulus' aspect ratio for the inner partition' stability, by Karim Ragui, Abdelkader Boutra, Y. Khaled Benkahla and Rachid Bennacer	
10:22	44	Onset of MHD convection in a non-newtonian fluid saturating a porous medium, by Cyrine Chahtour, Haykel Ben Hamed, Hassen Beji and Amenallah Guizani	
10:26	137	Characterization of wood residual extract released during its industrial hydrothermal treatment, by Rene Herrera Diaz, Daniela Thomas Da Silva and Rodrigo Llano-Ponte	
10:30	138	Impact of self-rewetting fluids on the performance of capillary evaporators, by Riadh Boubaker, Souad Harmand and Vincent Platel	
10:34	145	Thermodynamic analysis of simple and intercooled gas turbine performances with and without steam injection, by Djamal Eddine Ghersi and Meriem Amoura	
10:38	212	Study of a preferential co2/ch4 adsorption in silica monoliths by molecular modelling, by Saphir Venet, Patrice Bordat and Thierry Pigot	
10:42	215	Numerical study of heat and mass transfers during desorption of methanol and co2 on activated carbon, by Amal Bel Haj Jrad, Abdelaziz Zagnani and Abdallah Mhimid	
10:46	217	Numerical analysis of heat and mass transfer during steam condensation inside a vertical tube, by Adil Charef, M'Barek Feddaoui, Abderrahman Nait Alla and Monssif Najim	
10:50	220	Study of the contact angle influence on horizontal-tube falling film absorbers, by Peru Fernandez de Arroiabe, Asier Martinez-Urrutia, Xabier Peña, Manex Martinez-Agirre and M. Mounir Bou-Ali	
10:54	253	Effect of barite powder as a mineral addition on properties of heavy density concrete., by Emna Bouali, El Hadj Kadri, Abdelhak Kaci and Hamza Soualhi	
10:58	265	Wall thikness effects on the infrared spectra of multi-walled carbon nanotubes, by Mourad Boutahir, Rahmani Abdelhai, Fakrach Brahim, Hassane Chadli and Abdelali Rahmani	
11:02	345	Development of a new method of measuring thermal conductivity to test the insulation of a new coating., by Omar M'HAMDI , Olivier DUPUIS, Mutapha TALEB	
	305	A comparative and evaluative study of two earth-air heat exchangers (eahe) of different materials (pvc and zinc) for a warm temperate climate of northwestern algeria, by Mohammed Cherif Lekhal, Abderahmane Mejedoub Mokhtari and Rafik Belarbi.	

Time	ID	Title and Authors	
10:10	6	Phase diagrams of fatty acids as biosourced phase change materials for thermal energy storage, by Clement Mailhe, Imane Mahroug, Marie Duquesne, Fouzia Achchaq, Elena Palomo Del Barrio, Meidi Azaiez and Alexandre Godin	S6: THERMAL BUILDING & BUILDING MATERIALS
10:14	7	Thermo-fluid simulation for indoor air quality and buildings thermal comfort, by Souad Morsli, Amina Sabeur, Harry Ramenah, Mohammed El Ganaoui and Rachid Bennacer.	
10:18	105	Numerical modeling and thermal analysis of pcm melting filling a rectangular cavity with horizontal partial fins, by Tarik Bouhal, Saïf Ed-Dîn Fertahi, Oussama Limouri, Younes Agrouaz, Tarik Kousksou, Youssef Zeraouli and Abdelmajid Jamil	
10:22	119	A resistance and capacitance (RC) network model for a concrete block wall containing phase change material with ventilation tubes, by Amine Laaouatni, Nadia Martaj, Rachid Bennacer, Mohamed El Omari and Mohammed El Ganaoui.	
10:26	168	Valorization of aluminium and steel slags to produce sustainable ceramic bricks: a comparative study, by Eduardo Bonet-Martínez, Luis Pérez-Villarejo, María Dolores Eliche-Quesada and Eulogio Castro	
10:30	204	Experimental study of an innovative vegetalized roof in reunion island, by Gregoire Simon, Dimitri Bigot and Benoit Dumortier	
10:34	230	Impact of optimization of design parameters on energy consumption, thermal and visual comfort of a building in tropical zone, by Fallou Sene, Mactar Faye and Vincent Sambou	
10:38	241	Impact of insulation thicknesses of several types of external walls on energy cost with respect to different climate zones in morocco, by Ayoub Gounni, Mohamed Tahar Mabrouk, Abdelhamid Kheiri and Mustapha El Alami	
10:42	254	Impact of rail traffic on indoor environmental quality: magenta station in paris, by Ahmed Benabed, Aude Fortain and Karim Limam	
10:46	299	Experimental thermal and acoustical characterization of bio-based materials (aleppo pine wood, cork and their composites) for building insulation, by Amel Limam, Abdellatif Zerizer and Daniel Quenard.	
10:50	313	Biodegradable additive for the construction industry, by Juan Carlos Torres Lozada.	
10:54	314	Granulometric effect of silica powder on rheological and mechanical behavior of ssc, by Massinissa Lekkam, El Hadj Kadri, Abdelbaki Benmounah, Hamza Soualhi and Abderzak Gueciouer.	
10:58	336	consideration of rice straw as a reinforcement natural fiber for the construction, by Abakar Ali, Riad Benelmir, Jean-Louis Tanguier, Laurent Chrusciel and Abdoulaye Saleh Todjibal.	
11:02			
	34	Analysis of thermal energy storage in building materials incorporated by phase change material, by Oussama Youcef Souci and Samir Houat	

Thursday May 03th - Afternoon (S7 and S8)

Time	ID	Title and Authors	
14:50	48	Towards maritime pine wood quality optimization through the study of resin/rosin softening point, by Thomas Cabaret and Bertrand Charrier	S7:INNOVATIVE PROCESSES
14:54	50	Influence of hydrothermal treatment on the thermophysical properties of standard maize starch, by Leila Aklouche, Jean-Yves Monteau, Sid Ahmed Rezzoug, Luc Guihard and Zoulikha Rezzoug	
14:58	104	Comparative numerical study of evaporation by mixed convection of a binary liquid film (water-ethylene glycol and water-propylene glycol) flowing along a vertical channel, by Imène Bouchelkia, Nabila Labsi, Youb Khaled Benkahla and M'barek Feddaoui	
15:02	144	Design of a micro-system for biological nano-particle separation, by Ane Errarte, Alain Martin-Mayor, Maialen Aginagalde, Esperanza González, Juan Manuel Falcón-Perez, Felix Elortza and M. Mounir Bou-Ali	
15:06	154	Optimization of the operating time of a heat exchanger: thermo-economic criterion, by Sandra Djimi, Jean Mathurin Nzikou and Abdelhamid Kheiri	
15:10	162	Evolution of the oxidation front in aluminum alloy at high temperature, by Chaouki Benantar, Sabiha Benouaguef - Aklouche and Attafi Samir	
15:14	219	Comparative numerical study of single and two-phase models of nanofluid liquid film evaporation in a vertical channel, by Monssif Najim, Mbarek Feddaoui, Abderrahman Nait Alla and Adil Charef	
15:18	236	Assessment of the suitability of chestnut shells as renewable source to obtain second generation bio-ethanol, by Amaia Morales, Izaskun Dávila, Beatriz Gullón, Gemma Eibes and Patricia Gullón	
15:22	238	High accuracy infrared emissivity between 50 and 1000 ºc for solar materials characterization, by Raquel Fuente, Telmo Echániz, Iñigo González de Arrieta, Irene Urcelay-Olabarria, Josu Igartua, Manuel J. Tello and Gabriel A. López	
15:26	260	Influence of the molecular weight on pva composite membranes for fuel cell applications, by Carlos González-Guisasola and Amparo Ribes-Greus	
15:30	279	Liquefaction of kraft lignin at atmospheric pressure, by Silvia Silva, Patricia Santos, Darci Gatto and Jalel Labidi.	
15:34	304	Phenoxazine versus phenothiazine in the dsscs performance of new structuraly designed sensitizers, by Catalin-Paul Comstantin, Andra-Elena Stroia, Mariana-Dana Damaceanu, Mihai Mihaila, Mihaela Kusko and Razvan Pascu.	
15:38	325	protective plasma sprayed coating for thermo-sensitive substrates, by Soufiane Oukach, Hassan Hamdi, Mohammed El Ganaoui and Bernard Pateyron.	

Time	ID	Title and Authors	
14:50	251	C-si PV cells emissivity characterization at low operating temperatures for efficiency management, by Raquel Fuente, Telmo Echániz, Iñigo Gonzalez de Arrieta, Irene Urcelay-Olabarria, Manuel J. Tello and Gabriel A. López.	S8: STORAGE & RENEWABLE ENERGIE
14:54	102	Thermal behavior of the packed-bed thermal storage system filled with phase change material capsules, by Abdelmajid Elouali, Tarik Kousksou, Tarik El Rhafiki, Tarik Bouhal and Youssef Zeraouli	
14:58	127	Investigation the of improvement building envelope impact on energy consumption using energy audit, by Mokhtari Fatiha, Semmar Djaffar, Chikhi Mourad and Kasbadji Merzouk Nachida	
15:02	149	Potential use of bana rachis biomass for second generation bioethanol, by Itziar Egüés, Patricia Gullón, Izaskun Dávila, Joseba Alonso and Mª Angeles Andrés	
15:06	157	Performance analysis of solar cogeneration system, using organic rankine cycle, by Larbi Afif, Nahla Bouaziz and Mohammed Ganaoui	
15:10	206	Improving ethanol production using thermotolerant yeasts through an artificial intelligence design, by Fer Rebelo and Gonzalo Astray Dopazo	
15:14	207	Infiltration of carbon structures with a non-eutectic alloy for thermal energy storage (tes), by Imane Mahroug, Fouzia Achchaq, Elena Risueño Vilches, Alexandre Godin, Jean Toutain and Marie Duquesne	
15:18	240	Assessment of the vine shoots as renewable source to obtain second generation bio-ethanol, by Izaskun Dávila, Beatriz Gullón, Patricia Gullón and Jalel Labidi	
15:22	242	Simulation of the production of butanol from the hydrolysate of organosolv pretreated beech wood by extractive fermentation, by Helena González-Peñas, Nicolás Botana, Beatriz Gullón, Thelmo Lú-Chau, María Teresa Moreira, Juan Manuel Lema and Gemma Eibes	
15:26	296	Bottom-up experimental-numerical testing procedure for designing solar farms' structures by calculating the aerodynamic loads acting upon different panel configurations, by Ander Zarketa Astigarraga, Manex Martinez-Agirre, Alain Martin-Mayor and Joanes	
15:30	306	Novel triphenylamine-based conjugated systems for photovoltaic applications, by Andra-Elena Stroia and Mariana-Dana Damaceanu.	
15:34	335	Study of an injection device on the mamwe comoros network of solar photovoltaic energy through a static switch, by Said Mohamed Mariama, Angel Scipioni and Bernard Davat	

Friday May 04th - Morning (S9 and S10)

Time	ID	Title and Authors	
9:50	108	Two dimensional study of solar collector with inclined perforated baffles, by Mustapha Henaoui, Khaled Aliane and Zakaria Sari-Hassoun	S9: STORAGE & RENEWABLE ENERGIE
9:54	131	Pv-wind hybrid energy system for application of buildings in rural areas in comoros, by Kassim Mohamed Aboudou, El Ganaoui Mohammed and Fahad Maoulida	
9:58	134	Experimental study on the performance of flat-plate solar air heater (sah), by Charaf-Eddine Bensaci, Abdelhafid Moummi and Adnane Labed	
10:02	145	Thermodynamic analysis of simple and intercooled gas turbine performances with and without steam injection, by Djamal Eddine Ghersi and Meriem Amoura	
10:06	166	Experimental analysis of a solar adsorption system refrigeration cycle with silica-gel/water pair, by Ghilen Najeh, Gabsi Slimane, Elganaoui Mohammed and Benelmir Riad	
10:10	221	Experimental analysis of the wetted area on horizontal-tubes falling film heat exchangers, by Asier Martinez-Urrutia, Peru Fernandez de Arroiabe, Miguel Ramirez, Marta Brizuela, Manex Martinez-Agirre and M. Mounir Bou-Ali	
10:14	246	Impact of position and concentration of sodium on the photovoltaic properties of zinc oxide solar cells, by Mourad Boughrara, Hassan Ahmoum and Mohammed Kerouad	
10:18	271	Exergy analysis of different bioethanol production schemes using olive tree pruning as raw material, by Daissy Lorena Restrepo-Serna, Juan Camilo Solarte-Toro, Juan Miguel Romero-García, Encarnación Ruiz-Ramos, Eulogio Castro and Carlos Ariel Cardona-Alzate	
10:22	276	Solar hybrid road: from numerical model to an energy balance in france, by Nicolas Le Touz, Jean Dumoulin and Jean-Michel Piau	
10:26	277	Computational modelling of triangular sub-boundary-layer vortex generators, by Unai Fernandez, Jon Ruiz de Loizaga, Iñigo Errasti, Ana Boyano, Ekaitz Zulueta and Jose Manuel Lopez-Guede.	
10:30	286	Observer based control of a wind driven doubly fed induction generator, by Ahlem Sassi, Michel Zasadzinski, Harouna Souley Ali and Kamel Abderrahim.	
10:34	307	Multi-anchoring sensitizers for dye-sensitized solar cells, by Mariana-Dana Damaceanu, Catalin-Paul Constantin, Mihai Mihaila, Mihaela Kusko and Razvan Pascu.	
10:38	331	Heat transfer and fluid flow of biodiesel at a backward-facing step, by Fetta Danane, Bessah Rahma, Mahfoud Omar, Boudiaf Ahlem, Ahmia Aida Cherifa, Ouyahia Seifeddine., Alloune Rhiad and Benkahla Youb Khaled	
10:42	332	Sensitivity analysis of a solar trigeneration system integrated an organic absorption/compression cycle, by Rabeb Toujéni, Dorra Lounissi and Nahla Bouaziz.	

Time	ID	Title and Authors	
9:50	2	Coupled natural convection with surface radiation in a cylindrical annular enclosure, by Belkacem Ould Said, Mohamed Amine Medebber, Noureddine Retiel, Aissa Abdelrahmane and Mohammed El Ganaoui.	S10: ENERGETIC SYSTEMS
9:54	5	Performance analysis of solar pv and thermal hybrid active wall integrated with pcms, by Lahoucine Ouhsaine, Monica Siroux, Mohammed El Ganaoui and Abdelaziz Mimet	
9:58	33	Numerical investigation of an aspect ratio effect on mixed convection in a horizontal channel with lattice boltzmann method, by Nassim Mahfoud Sahraoui, Samir Houat and Mohammed El Ganaoui	
10:02	107	Three-dimensional numerical study of mixed convection within a ventilated cavity (shape ' I ') crossed by a nanofluid under the effect of a magnetic field, by Seddik Kherroubi, Karim Ragui and Abdelkader Boutra	
10:06	122	Frictions effects on the fast transitions through acoustic liquid, by Zohra Ouchiha, Braham Fahssi and S. Mostafa Ghiaasiaan	
10:10	126	Thermal and optical characteristics of glazing window filled with paraffin containing nanoparticles, by Dong Li	
10:14	155	Thermodynamic analysis of organic rankine cycles using pure and mixture fluids, by Basma Hamdi, Mohamed Tahar Mabrouk, Abdelhamid Kheiri and Lakdar Kairouani	
10:18	164	Enhancing the power quality of an islanded microgrid including renewable energy sources, by Islam Ziouani, Bilal Amghar, Ikram El Abbassi, Abdel-Moumen Darcherif and Djamel Boukhetala	
10:22	209	Simulation and comparison of combined ejector-absorption and single effect absorption refrigeration systems, by Nihel Benzid, Mohammed El Ganaoui and Nejib Hajji	
10:26	261	Obtaining, characterisation and preliminary validation of functionalised poly (vinyl alcohol)/graphene oxide membranes for energy applications, by Oscar Gil-Castell, Raquel Cerveró-Campos and Amparo Ribes-Greus	
10:30	273	Thermal and structural analysis of thick-walled boiler component in transient state, by Bohdan Węglowski, Marcin Pilarczyk and Jan Taler	
10:34	290	control of harmonic distortion in a smart grid, by Sid Ahmed Tadjer, Idir Habi, Mohammed El-Ganaoui and Angel Scipioni.	
10:38	324	Non-conventional materials supported nickel catalysts for steam reforming of bio-oil/bio glycerol mixture, by Kepa Bizkarra, V. Laura Barrio, Pedro Luis Arias and José F. Cambra.	
10:42	330	Effect of uniform and non-uniform boundary conditions on species separation in a tilting cell, by Abdeslam Omara, Said Abboudi and Mouna Touiker.	

Friday May 04th - Afternoon (S11 and S12)

Time	ID	Title and Authors	
14:50	17	Modeling hygrothermal bhavior of a bio-based wall building material: impact on indoor climate, by Faiza Mnasri, Abdelhamid Kheiri and Mohammed El Ganaoui.	S11: THERMAL BUILDING & BUILDING MATERIALS & ....
14:54	54	Economic assessment of high-pure lignin extraction processes as chemical precursor by computer-aided simulation, by Javier Fernández-Rodríguez, Xabier Erdocia, María González Alriols and Jalel Labidi	
14:58	205	Feasibility of using wood chips to regulate relative humidity inside a building: a numerical study, by Dimitri Bigot, Cyril Ott, Stephane Guichard and Bruno Malet-Damour	
15:02	208	Numerical investigation of hygrothermal behavior of bio-based building envelope in high relative humidity, by M Rahim, R Djedjig, A.D Tran Le and M El-Ganaoui	
15:06	226	Influence of thermal insulation's and phase change material's insertion within a partition wall on the energy consumption of a conditioned room under adjacent local periodical temperature effect, by Nisrine Hanchi, Hamid Hamza, Rabiaa Idmoussa, Jawad Lahjomri and Abdelaziz Oubarra	
15:10	227	Etude de l'influence du materiaux de stack sur l'ecoulement et le transfert de chaleur dans un systeme thermo-acoustique par la methode de boltzmann sur reseau, by Oumayma Miled, Hacen Dhahri and Abdallah Mhimid.	
15:14	232	Integration of a solar cooling and heating system.case of a residential building located in blida region, by Sabrina Sami, Karim Kaci, Mohamed El -Guanaoui and Djaffer Semma	
15:18	252	Wave generation in an oscillating water column system for wave energy conversion, by Bouhrim Hafsa, Abdellatif El Marjani and Hamid Mounir	
15:22	255	Experimental and numerical study of particle deposition inside buildings, by Ahmed Benabed, Karim Limam, Sakina El Hamdani and Marc Abadie	
15:26	305	A comparative and evaluative study of two earth-air heat exchangers (eahe) of different materials (pvc and zinc) for a warm temperate climate of northwestern algeria, by Mohammed Cherif Lekhal,	
15:30	308	Applying combined evolutionary algorithms for solving the blocking flowshop scheduling problem, by Ghita. Lebbar, Abdellah El Barkany, Abdelouahhab Jabri, Ikram El Abbassi and Moumen Darcherif.	
15:34	337	Determining the optimum addition of rice straw in banco composite, by Clément Labintan, Christian Adadja, Riad Benelmir and Mohamed Gibigaye.	
15:38	333	Thermal-electric analogy and inertia for thermal performance of building envelops, by Rafik Absi and Stéphane Marchandon.	

Time	ID	Title and Authors	
14:50	101	Investigation numerique tridimensionnelle de la convection mixte au sein d'une cavite ventilee de forme ' I ', traversee par un nanofluide sous l'action d'un champ magnetique., by Seddik Kherroubi, Karim Ragui and Abdelkader Boutra	S12: ENERGETIC SYSTEMS
14:54	103	Simulation of natural convection in a horizontal channel with heat sources mounted with porous blocks by the lattice boltzmann method (mrt-lbm), by Bouarnouna Kaoutar, Boutra Abdelkader, Benzema Mahdi, El Ganaoui Mohammed and Benkahla Youb.Khaled	
14:58	114	Double-diffusive mixed convection of pseudoplastic fluids in an inclined square cavity partially heated, by Nihal Toudja, Nabila Labsi, Youb Khaled Benkahla, Abdelkader Boutra, Seif-Eddine Ouyahia and Mahdi Benzema	
15:02	120	Entropy generation due to the mixed convection flow of mwcnt-mgo/water hybrid nanofluid in a vented complex shape cavity, by Mahdi Benzema, Youb Khaled Benkahla, Ahlam Boudiaf, Seif-Eddine Ouyahia and Mohammed El Ganaoui	
15:06	153	Thermal stability and supercooling of the pcm urea-sodium nitrate eutectic mixture, by Laura Quant, Gonzalo Diarce, Álvaro Campos-Celador, Didier Haillot and Ana García-Romero	
15:10	160	Energy analysis of a new combined orc-vcc system for tri-generation and desalination of seawater, by Toujeni Noureddine and Nahla Bouaziz	
15:14	210	Energetic valorization of used tires by pyrolysis: effect of catalysts on biofuel, by Hiba Rejeb, Emna Berrich Betouche and Mohamed Hachemi Chahbani	
15:18	225	Thermal characterization of unfired earth bricks filled with phase change material using the heat flow meter method, by Said Hamdaoui, Mustapha Mahdaoui, Tarik Kousksou, Abdelouahad Ait Msaad, Abdelmajid El Bouardi and Hassan Ezbakhe	
15:22	268	Environmental sustainability assessment of biorefinery production chains from lignocellulosic biomass, by Maria Teresa Moreira, Sara Bello, Carmen Ríos and Gumersindo Feijoo.	
15:26	269	Exergy analysis and exergoeconomic performance evaluation of a sulfuric acid production unit, by Aicha Mabrouk, Xabier Erdocia, Maria Gonzalez Alriols and Jalel Labidi.	
15:30	285	Hydromagnetic natural convection from a horizontal porous annulus with heat generation, by Jabrane Belabid and Soufiane Belhouideg.	
15:34	309	Contribution to the modeling of the integrated approach of planning and scheduling, by Zineb Ibn Majdoub Hassani, Abdellah El Barkany, Jabri Abdelouahhab, Ikram El Abbassi and Abdel Moumen Darcherif.	
15:38	338	Modelling and simulation analysis of a compact commercial silica-gel/water adsorption chiller, by Dalia Si Ahmed, Nadia Bendjaballah, Christian Cristofari, Riad Benelmir, Manuel Espinosa-Lopez and André Donnot	

Topical school

ECO-MATERIAL, ENERGY ET SUSTAINABLE CONSTRUCTION

Specialized school April 30th – May 1st, 2018.

4th Edition

Eco-materials and sustainable construction are essential topics given current and future challenges of energy transition and sustainable development.

The fourth edition of the specialized school "Eco-Material, Energy and Sustainable Construction" will focus on the relationship between energy and materials topics. The school will take place on 30 April to 1st May, 2018 at the Miramar Palace in San Sebastian, Spain.

The specialized school "Eco-Material, Energy and Sustainable Construction" will include lectures and seminars. The lectures will cover fundamental and applied aspects related to transport phenomena modeling. The lecturers are international experts in the areas of renewable energy, building energy performance and durability of structures.

The specialized school aims to be an inter-disciplinary interface in the areas of materials, Energy and Environment, putting the emphasis on the renewal resources, materials for renewable energy, energy storage, bio-sourced materials for building as well as social issues about energy and environment with contributions of international highlighting experts.

The school is intended in order of priority to PhD students, Masters 2, Engineers in final year, post doc and researchers.

ICOME 18 Awards

Student Award

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

Averroes Award

The new edition of the Averroes[2] 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)*

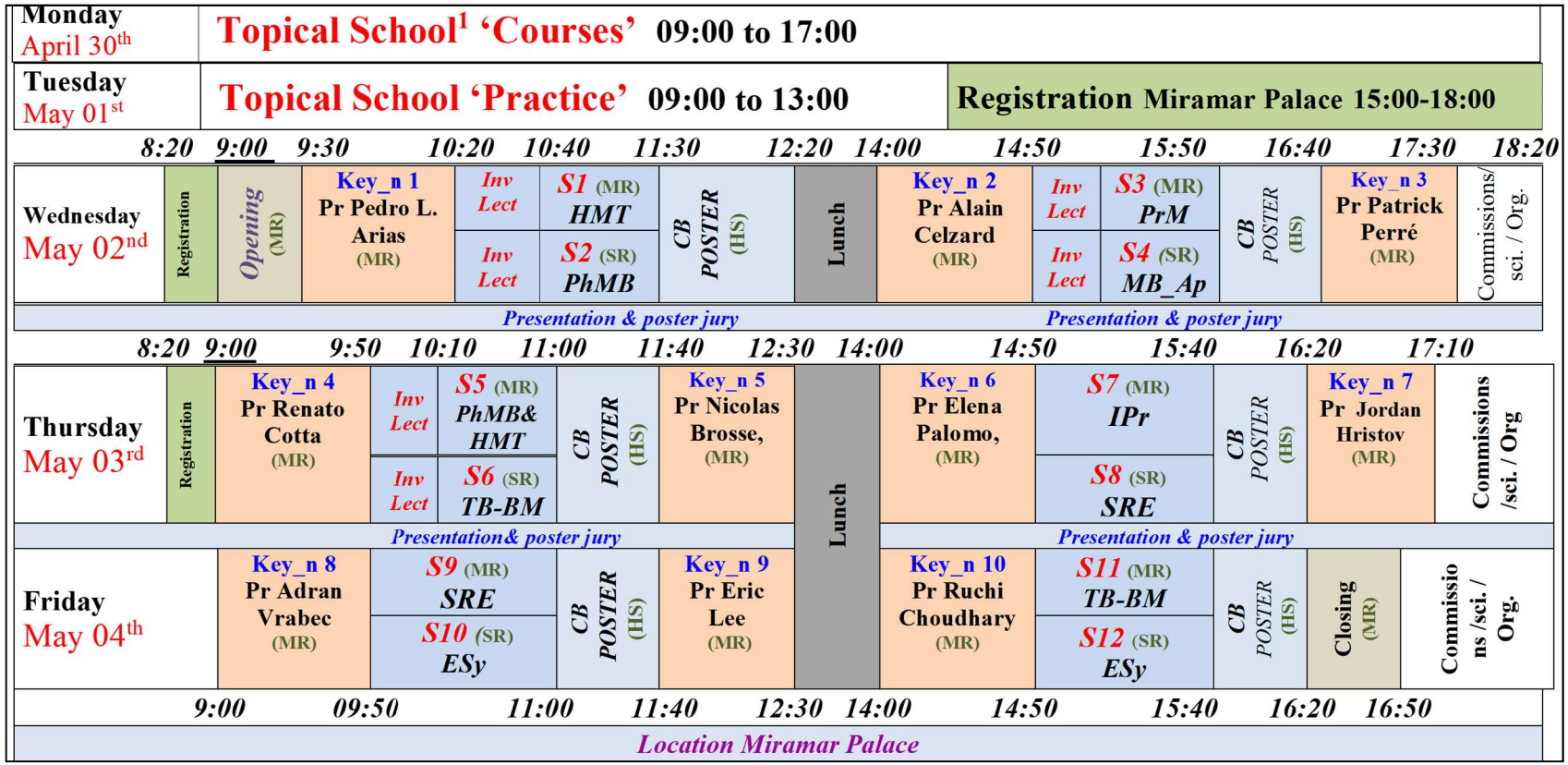
[2] Averroes (Ibn Rochd) intellectual European, born in Spain, died in Morocco, both a philosopher, a theologian, a lawyer, a mathematician and a 12th century Andalusian doctor

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*

Averroes prize 2017 Abdul Majeed MOHAMAD, Education Excellence awards

Abdul Majeed Mohamad *Professor. in Eastern Mediterranean University, Cyprus (1993-1999). Since 2000 he is Prof. of thermofluid in Dept. of Mechanical Engineering, University of Calgary, Canada. Dr. Mohamad held few admin positions, director 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. Dr. Mohamad elected Fellow Member of American Society of Mechanical Engineer (ASME).Scientific council member of International Centre for Heat and Mass Transfer. He has been awarded Research Excellence and Graduate Teaching Excellence awards from University of Calgary, Dept. of Mechanical Engineering, Canada.*


Monday April 30th
Topical School[1] 'Courses' 09:00 to 17:00
Tuesday May 01st
Topical School 'Practice' 09:00 to 13:00
Registration Miramar Palace 15:00-18:00
8:20 9:00 9:30 10:20 10:40 11:30 12:20 14:00 14:50 15:50 16:40 17:30 18:20
Wednesday May 02nd
Registration
Opening (MR)
Key_n 1 Pr Pedro L. Arias (MR)
Inv Lect
S1 (MR) HMT
Inv Lect
S2 (SR) PhMB
CB POSTER (HS)
Lunch
Key_n 2 Pr Alain Celzard (MR)
Inv Lect
S3 (MR) PrM
Inv Lect
S4 (SR) MB_Ap
CB POSTER (HS)
Key_n 3 Pr Patrick Perré (MR)
Commissions/ sci. / Org.
Presentation & poster jury
Presentation & poster jury
8:20 9:00 9:50 10:10 11:00 11:40 12:30 14:00 14:50 15:40 16:20 17:10
Thursday May 03rd
Registration
Key_n 4 Pr Renato Cotta (MR)
Inv Lect
S5 (MR) PhMB& HMT
Inv Lect
S6 (SR) TB-BM
CB POSTER (HS)
Key_n 5 Pr Nicolas Brosse, (MR)
Lunch
Key_n 6 Pr Elena Palomo, (MR)
S7 (MR) IPr
S8 (SR) SRE
CB POSTER (HS)
Key_n 7 Pr Jordan Hristov (MR)
Commissions /sci. / Org
Presentation& poster jury
Presentation & poster jury
Friday May 04th
Key_n 8 Pr Adran Vrabec (MR)
S9 (MR) SRE
S10 (SR) ESy
CB POSTER (HS)
Key_n 9 Pr Eric Lee (MR)
Key_n 10 Pr Ruchi Choudhary (MR)
S11 (MR) TB-BM
S12 (SR) ESy
CB POSTER (HS)
Closing (MR)
Commissio ns /sci. / Org.
9:00 09:50 11:00 11:40 12:30 14:00 14:50 15:40 16:20 16:50
Location Miramar Palace

Sponsors


UNIVERSITÉ
DE LORRAINE


école
normale
supérieure
paris-saclay
université
PARIS-SACLAY


Universidad
del País Vasco
Euskal Herriko
Unibertsitatea


IVERSITÉ
DE PAU ET DES
PAYS DE L'ADOUR


BioRP
Bio Refinery Processes


IPREM


Cachan


lermab


IUT
Henri Poincaré
LONGWY


ECAM EPMI


Eco-Material, Energy and Sustainable Construction
PICOME 19
San Sebastian
Tutorial School April 30/May 02 2019


AL3DConcept